

# COMPUTERWORLD

## AT&T bets computer business on NCR takeover

Industry's history frowns on hostile takeovers

### ANALYSIS

BY NELL MARGOLIS  
CW STAFF

If AT&T succeeds in the hostile takeover of a computer firm, it will join a highly selective group; if it acquires NCR Corp. and proceeds to actually create the merged firm it envisions, it will be in a class by itself.

"The history of acquisitions in the computer industry is that they generally don't work," noted Peter Labe, an analyst at Labe, Simpson & Co.

The most spectacular failure of recent years is the attempt of

former Burroughs Corp. Chairman W. Michael Blumenthal to swallow Sperry Corp. and build Unisys Corp. into a \$10 billion powerhouse designed to carry enough weight to challenge IBM. Today, after layoffs and restructurings, Unisys is a relative shadow of its former self, with its shareholdings valued at considerably less than \$1 billion.

If the general prognosis for computer industry acquisitions is dim, several analysts saw nothing brighter in the particular prospect of an AT&T/NCR union.

"Takeovers are risky; hostile takeovers are all the more so —

*Continued on page 125*

### Global view

If it acquires NCR, AT&T will gain a foreign presence that dwarfs its own

1989 installed base	AT&T	NCR
Small scale <sup>1</sup>		
U.S.	41,400	51,500
Worldwide	48,900	106,700
Medium scale <sup>2</sup>		
U.S.	6,100	1,800
Worldwide	6,900	4,900

### 1989 value of small and medium scale shipments

U.S.	\$470M	\$470M
Worldwide	\$520M	\$1,140M

<sup>1</sup> Systems costing \$10,000 to \$100,000  
<sup>2</sup> Systems costing \$100,000 to \$1 million

Source: International Data Corp.  
CW Chart: Paul Mock

Besieged execs spurn unwanted bid, but users see value in marriage of open systems strategies

BY ELLIS BOOKER  
and MICHAEL FITZGERALD  
CW STAFF

While NCR Corp.'s chairman struggled against the unwanted embrace of AT&T's hostile \$6.12 billion takeover bid last week, NCR customers were calmly evaluating the merits of a proposed merger.

A merger "would strengthen me as a customer and offer the marketplace [a strategy] that would complement but not directly compete with IBM," said Jim Wegmann, vice president of corporate electronic data processing at Talman Home Federal

Savings and Loan in Chicago. The bank uses NCR personal computers and Tower systems and AT&T's Unix System V.

### Analysts baffled

The proposed merger, which began with talks first reported in mid-November, left analysts amazed at the sudden aggressiveness of AT&T and debating the likelihood of yet another grand computer industry partnership going up in flames (see analysis at left).

The all-cash bid to shareholders of the Dayton, Ohio, computer maker, which AT&T hopes

*Continued on page 124*

## Humbug! No Officevision under the tree this season

BY ROSEMARY HAMILTON  
CW STAFF

IBM will miss its year-end deadline for delivery of Officevision Release 2, industry sources confirmed last week.

The company plans to release a status report on the strategic integrated office platform later this month, an IBM spokesman reaffirmed.

Analysts and an industry source with access to development plans said IBM will announce a delay of at least three more months. They said they believe the earliest IBM can deliver Officevision Release 2 is early in the second quarter of 1991.

Industry sources said they expect IBM to pin the delay on a shift in development efforts for the workstation version of Officevision. Apparently, the company has decided not to proceed with its previous plan to deliver the local-area network version of Officevision Release 2 on OS/2 Release 1.2 but will instead target it for OS/2 Release 1.3,

which has two availability dates. OS/2 Release 1.3 Extended Edition is scheduled for shipment by year's end. The LAN Server version is due out in March.

The shift to Release 1.3 will likely cause delays on the host-based versions of Officevision Release 2, the sources said. A key aspect of the host versions is a direct connection to OS/2, requiring an accommodation to the shift to Release 1.3. •

## Simmons puts Bank of Boston on IS offensive

BY MARYFRAN JOHNSON  
CW STAFF

BOSTON — With the defensive posture of a bank beset by tumbling real estate values and severe economic doldrums, senior managers at Bank of Boston will

take a look at a new offensive from their top information systems executive this week.

Michael Simmons, group executive vice president for technology and operations, will present the bank's audit committee with his "Technology Strategy," a five-year blueprint for streamlining the bank's disjointed IS plan.

When Simmons came to Bank of Boston last spring from the top IS job at BankAmerica Corp., he surveyed the technical landscape and found 131 major applications, 55 separate databases, 13 local-area network operating systems, 110 LAN servers, nearly 3,500 workstations and

more than 10,000 dumb terminals and personal computers.

Ironically, part of his blueprint involves casting off some of the local computer vendors whose woes are often seen as partially to blame for the decline of the Massachusetts economy, which has been in a slump since late last year.

From 11 different hardware platforms, Simmons will be paring away several vendors including Data General Corp., Wang Laboratories, Inc., Nixdorf Computer Corp. and Bull HN Information Systems, Inc. However, Simmons said he will keep IBM mainframes, Digital Equipment

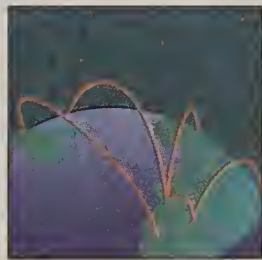
*Continued on page 123*

## Latin America making connections

BY ELISABETH HORWITT  
CW STAFF

Drug wars, political upheavals and alligators in the public waterways notwithstanding, one of the biggest deterrents to doing business in Latin America has been the lack of decent communications services. That may be on the verge of a change, with commerce-hungry administrations bringing in foreign companies to provide the necessary funding and expertise to bring their telephone systems up to snuff.

The improvements cannot come fast enough for communications managers struggling to



provide an adequate network infrastructure for their companies' Latin American business dealings. Among the major hassles are unreliable or nonexistent telephone circuits, exorbitant charges, regulatory obstacles to implementing communications and computer equipment "not made here" and de-

lays in circuit orders that can stretch out over months.

"The hardest places to get private lines are in Latin America; it's been a burr in our sides," said Patrick Greenish, managing director of Federal Express Corp.'s international tele-

*Continued on page 6*

## INSIDE

**Executive Report** — Is moving from central IS to business departments a career advancement? Many IS staffers think so. Page 87.

**In Depth** — Career boosters for women in IS. Page 95.

**Computer systems are vulnerable**, security panel says — and users are quite often their own worst enemy. Page 4.

**Northern Telecom bails out** of LAN development, leaving small user base wondering where to turn. Page 123.



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## Quotable

*"It must be a desperate attempt to salvage AT&T's disastrous foray into the computer business."*

CHARLES E. EXLEY JR.  
NCR

*"Chuck, all we have is a difference of opinion on price."*

ROBERT E. ALLEN  
AT&T

On AT&T's bid for NCR.  
See story page 124.

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# EXECUTIVE BRIEFING

■ **NCR users appeared unconcerned** last week about AT&T's \$6.12 billion hostile takeover attempt. Users said the two vendors share similar open systems strategies, and some hoped AT&T's bankroll would shore up NCR's ambitious plans to overhaul its product line. But the computer industry's poor merger history has many analysts concerned that the combination could be disastrous for both firms. Some European users think NCR's position will be strengthened overseas if it can get an injection of Unix savvy from AT&T. **Pages 1, 124 and 125.**

■ **Can IS and business really mix?** IS professionals who've made the move into user departments say yes. Although some twinges of separation anxiety are common, most say they were able to adjust to the new setting. Some are anxious to shake their technical image and blend into the mainstream for career advancement. **Page 87.**

■ **Computers are too vulnerable** to security breaches, and the government, vendors and users aren't doing enough to deal with the problem, a government study group said last week. The panel of experts recommended that a nongovernment foundation be established to promote safe computing. **Page 4.**

■ **Kill the letter: Save a buck — even ten.** That could be the word coming from corporate offices when executives learn that despite the use of PCs, the cost of producing a one-page, dictated letter has risen 79% in 10 years to \$10.85. **Page 81.**

■ **Sweeping changes are on the horizon** for IS at ailing Bank of Boston. Newly installed CIO Michael Simmons has outlined a strategy that cuts out existing proprietary systems, consolidates data centers and greatly expands networks. **Page 1.**

■ **IBM will miss its 1990 target ship date** for Officevision Release 2, sources say. It will probably blame the latest delay on a decision to move to OS/2 Release 1.3 as the workstation platform for Officevision. **Page 1.**

■ **Northern Telecom has quit** the LAN market, discontinuing its Lanstar hub and leaving about 100 users with no easy migration solution. Northern will continue to support Lanstar but won't enhance it. **Page 123.**

■ **Hiring plans are producing negative numbers** for the first time since 1983,

said a report by Manpower. The agency found that more firms plan to cut workers than to hire them. Most of the 15,000 companies responding to the survey reported no plans to change their staffing levels. **Page 82.**

■ **IS professionals in non-profit organizations** say that while salaries may lean toward the low end, generous benefits, job security and satisfaction make their vocations worthwhile. **Page 108.**

■ **New York-area users who are nervous about disaster recovery** should get a boost from a decision by New York Telephone and New England Telephone to let alternative access providers share central office space. The move should make backup services more accessible. **Page 8.**

■ **On-site this week:** New technology means new market opportunities for the world's leading credit-card companies. Firms such as Visa and Mastercard hope to use computers and sophisticated networks to help customers use credit cards in new ways. **Page 71.** Having started out with an old, donated minicomputer to support its processing needs, Litel is among the first to try DEC's mainframes. **Page 33.** Residents of Ontario will soon be getting copies of official records out of an imaging database. **Page 34.** PCs are becoming a standard systems development tool at First National Bank of Chicago, which hopes that type of technology use will help it become a leader in quality. **Page 45.**

## LATE NEWS

# Signet signals outsourcing vendors

BY ELISABETH HORWITT  
CW STAFF

RICHMOND, Va. — Signet Banking Corp. is expected to put out a request for proposals to a number of "major outsourcing vendors" this week as part of a recently initiated outsourcing evaluation, according to Floyd Griggs Jr., executive vice president of information systems.

The bank's IS department initially met with bank management to propose the evaluation on Nov. 5, Griggs said late last week.

"We felt we could not overlook the outsourcing alternative as a means to accomplish a number of planned major IS initiatives," he added. "The timing and cost of getting those initiatives done [in-house] is known; the outsourcing evaluation is simply to see if there is a provider that can implement those plans in a more cost-effective, shorter time frame than we could."

The initiatives, which have been approved by management for implementation during the next four years, include the following:

- Developing application software for an integrated systems approach "so that, for example, you would have one deposit application instead of several to handle different kinds of activities," Griggs said.

- Data center automation targeting lights-out operations.

- Migration of the bank's data center operations from "a multivendor mainframe environment to a single environment: IBM's," Griggs said.

The financial firm has hired First Manhattan Consulting Group of New York to assist it in the evaluation process. The process, which should be completed by March, "will put everything on the table" as possible outsourcing fodder, including IS, data center, networking and network management operations, Griggs said.

Signet, a \$12.4 billion holding company, has banking operations in Virginia, Maryland and Washington, D.C., as well as an international division. With 6,592 employees, it is the 46th largest U.S. bank.

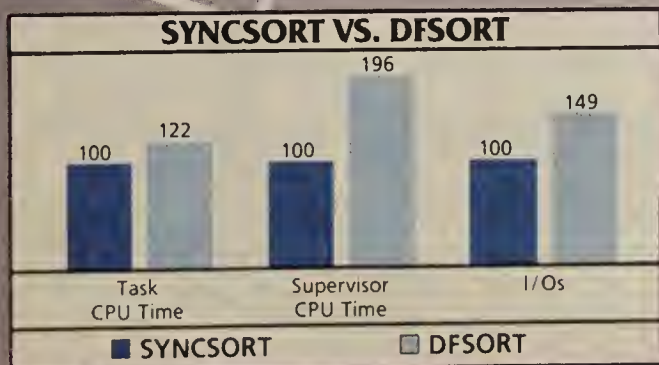


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# U.S. systems open to threat, panel says

BY GARY H. ANTHERS  
CW STAFF

WASHINGTON, D.C. — An independent panel of experts said last week that computer systems in the U.S. are highly vulnerable to intruders and are becoming more so as a result of the failure of the federal government and the computer industry to set standards and develop technology for security, safety and reliability.

The panel, a committee of the National Research Council, also faulted users for their failure to follow the most basic and important tenets of computer security, and it said that recent highly publicized reports of viruses, worms, Trojan horses and the like are "leading indicators" of the security problems of the next decade.

## Horror stories

The panel cited a number of computer horror stories, including a \$259 million currency scam at Volkswagen of America, Inc., an attempt that was very nearly successful to bilk the Pennsylvania lottery out of \$15 million by printing counterfeit lottery tickets and thousands of reported attacks from viruses and other rogue programs.

While the panel blamed poor technology for some of those incidents, it said users are often their own worst enemies when it comes to computer security. Users routinely do things that

dit and failing to develop recovery mechanisms, according to the panel's 300-page report.

Users often suffer because they buy equipment without security features to save money,



**Committee members** Peter Neumann, Richard Kemmerer and Chairman David Clark (from left) briefed the press on U.S. computers at risk

defy basic security principles, such as picking easily guessed passwords, storing passwords to secure machines on machines with no security, failing to reset default logons provided by vendors, failing to log security-relevant system actions for later au-

said Harold F. Tipton, a committee member and computer security manager at Rockwell International Corp.: "It's like seat belts. When they cost extra, not many people bought them." He said the equipment evaluation and certification process recom-

mended by the panel would encourage more bundling of security features with basic equipment configurations, "so users can't strip it out to save \$1,000."

## Nurture security

The panel recommended establishment of a nongovernment foundation to nurture the development and commercialization of technology for computer security, safety and reliability.

"Our central conclusion is that national computing and communications systems are vulnerable to potentially catastrophic security breaches and accidental failures," said David D. Clark, committee chairman and a computer scientist at MIT. "So far the nation has been remarkably lucky in escaping any successful systematic attempts to subvert critical computing systems."

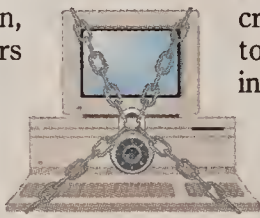
The panel's report, "Computers at Risk — Safe Computing in the Information Age," released last week, caps an 18-month effort by 16 representatives of industry and academia appointed by the National Research Council, the principal operating arm of the National Academies of Sciences and Engineering. The work was requested by the Pentagon's Defense Advanced Research Projects Agency in the wake of the Internet worm incident two years ago.

## Foundation developed for software security

**T**he National Research Council-sanctioned commission on computer security recommended the establishment of an Information Security Foundation, which would be a consortium of users, vendors and parties such as insurance companies.

The foundation would formally evaluate and certify security products as well as "broker and enhance communications between commercial and national security interests."

The foundation would also develop and publish software development principles for secure systems. For example, the committee's report stated that software developers



should strive for simplicity and smallness, use higher-level languages, design software that would limit the need for secrecy and provide excess memory and processing power to reduce the need to later solve performance problems by introducing complexity in the software.

Possible elements of generally accepted system security principles, according to the report, would include quality control, access control, user identification and authentication, protection of executable code, security logging, data encryption, operational tools to support security, independent audit and hazard analysis.

GARY H. ANTHERS

## DEC to unroll network, applications blueprint

BY MARYFRAN JOHNSON  
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. will roll out some big wheels for its networking and distributed applications strategy this week with the introduction of DEC Message Q and Application Control Architecture.

Akin to electronic mail sent among users, DEC Message Q is like E-mail between applications residing on different network machines. This high-level application programming interface will be available in early Febru-

ary in versions for VAX/VMS, DEC's Unix-based Ultrix, MS-DOS and OS/2.

"At a shop where programmers have to write all the complex linkages between different applications, most of us would rather buy it than write it ourselves," said Shalom Bryski, vice president of VAX systems and networks at Bankers Trust Co. in New York.

What analysts considered to be the more significant part of the announcement, however, was Application Control Architecture. While it is only a paper architecture at this point — no

software will be available for six to nine months — it will eventually enable separate applications to communicate across a network without forcing each computer to run its own version of that application.

Application Control Architecture "really can be considered the second version of DEC Live Links, which today requires the application to be resident on each computer," said Cliff Conneighton, an analyst at Gartner Group, Inc. in Stamford, Conn. "This is DEC's first serious stab at an object-oriented environment for end users, but it's not the part they see. It's all about how applications communicate."

Also this week, DEC will commit itself to fully integrating the Open Software Foundation's Distributed Computing Environ-

ment into its own Network Application Support program, which is the marketing umbrella for a number of its networking software products.

DEC Message Q was born out of actual customer experiences with distributed applications. "The product has been around for four years but only through DEC's customer software services contracts," Conneighton explained. "Now DEC is packaging it, pricing it and documenting it better."

Unlike the industry standard Remote Procedure Call, which is intended for communication between tightly coupled, synchronous applications, the Message Q software is a collection of interfaces for building loosely coupled applications that can communicate asynchronously.

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Source: Gartner Group 1990

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# IBM branch makes move to UK

BY JOHANNA AMBROSIO  
CW STAFF

ARMONK, N.Y. — IBM announced last week it is moving the headquarters staff of its Communication Systems line of business overseas, marking the first time it has located responsibility for that important a division outside the U.S.

IBM said that the staff will relocate to the UK in a bid to become a more "global" organization. Communication Systems is responsible for products in the areas of networking, value-added network services and network management.

About 120 IBM employees, most of them from the U.S., will be in new offices in Staines, England, just outside of London. Included in the move will be Ellen M. Hancock, general manager and the top executive at Communication Systems; Frank J. Elliott, assistant general manager for marketing; and John J. Cachianes, assistant general manager of finance and planning. The move will occur in phases, to be

complete by September 1991.

Outside observers and IBM executives said the move should have no immediate impact on users because support, product development and marketing will remain much the same as they are now.

"Most customers deal with the marketing organization, not the headquarters staff," Elliott said. He also pointed out that most of Communication Systems' 12,000-plus employees will remain where they are. The hub of the organization's U.S. activity will continue to be in Raleigh, N.C.

## Telling time

The move does mean that developers in IBM's Communication Systems group in Raleigh will "have to learn how to deal across different time zones" with headquarters staff when it comes to discussing such issues as "worldwide opportunity and market segmentation" for various IBM communications products, Elliott said.

The move puts Hancock and

her staff closer to major IBM development laboratories in Europe, company sources pointed out. These include the CICS lab in Hursley, England; the LaGaude, France, lab, which is primarily responsible for communications controllers and modems; and the Rome laboratory, which develops Open Systems Interconnect products as well as some Netview components and which IBM recently announced it would expand.

Analysts noted that the move will give users better access to products developed for the more standards-conscious European market. "It gives customers a more leading-edge viewpoint," said H. Paris Burstyn, vice president of telecommunications research at Business Research Group in Newton, Mass.

He said it is a "good move for IBM. If you're going to play in the global market, it's important to be geographically close to the various countries, because each one has different requirements."

Senior editor Elisabeth Horwitt contributed to this report.

# Better integration is focus of IBM software unit shift

BY JOHANNA AMBROSIO  
CW STAFF

ARMONK, N.Y. — IBM has quietly made a series of organizational changes to coordinate integration strategies among various business units. Among these moves is a new group to oversee client/server computing and integration between Systems Application Architecture (SAA) and AIX computers.

Taken together, the moves mean "customers should see better-integrated solutions than in the past," said William J. Malik, program director of software management strategies at Gartner Group, Inc. in Stamford, Conn. "IBM is focusing on the key area of applications compatibility across its platforms."

The changes were announced on Nov. 30 to IBM employees via the company's electronic bulletin board. No formal statement was issued.

Among the changes was the creation of a new group called Systems Structure and Management. It is based in Somers, N.Y., and is under the purview of the Programming Systems organization headed by Earl F. Wheeler. The new unit is charged with overseeing cooperative processing, client/server

computing and integration between the company's SAA and AIX platforms.

Mike Saranga was named assistant general manager of Systems Structure and Management. He had previously been the assistant general manager of the Development Operations Group in the Personal Systems organization based in Boca Raton, Fla.

Another unit was formed to coordinate the development of all operating systems for personal computers and workstations. IBM had previously announced it was working on common subsystems for OS/2 and AIX, and this group provides the organizational framework to do so, an IBM spokeswoman said.

The group, called Programming, is also based in Somers but is part of the Personal Systems organization headed by James Cannavino. Leland Reisinger Jr. is assistant general manager of Programming. He had previously been vice president of programming in the Entry Systems Division in Boca Raton.

The IBM spokeswoman characterized the moves as "small reorganizations. They're more for operational efficiencies and don't signify any new mission intents."

## Connections

FROM PAGE 1

communications group.

Federal Express avoided the problem of line scarcity in South America by negotiating with governments to put in its own very small-aperture terminal networks, Greenish said. The drawback of this arrangement is that once such systems are built, the government usually takes them over and leases the band-

caro, the Italy-based firm's information systems manager.

Brazil continues to protect local industry by prohibiting the use of communications and computer equipment "not made here," users reported. Federal Express ran up against this policy when it wanted to install IBM Systems Network Architecture (SNA) terminals at the Brazilian offices of its Flying Tiger subsidiary, according to Denise Smalley, Federal Express senior telecommunications analyst. The

port duties on telecommunications equipment.

A common practice for users in many Latin American countries is to "purchase twice as many lines as you need at any given time, because roughly half of them will be out of service," said Yousef Javadi, a spokesman at international carrier Overseas Telecommunications, Inc.







There are exceptions to this bleak picture. Countries such as Chile and Costa Rica "have outstanding [telecommunications companies]," said Richard Boley, manager of international communications at Westinghouse Electric Corp. However, the systems in most countries "couldn't get any worse, or they would totally collapse," he added.

Relief may be coming, however, on the wave of privatization that is sweeping Latin America and has extended to telephone companies in at least three countries (see story at right). However, while improving telecommunications services is a stated objective for such sales, it could take years for users to experience any significant change for the better, sources said.

One of the most serious obstacles to a large-scale revamp is the entrenched government bureaucracies that the new owners will have to deal with — and probably trim. "These are state-run, feather-bedding companies," Boley said. "You can't afford to pay all these people who are doing nothing; however, when the new buyers start handing out pink slips, they will run up against the unions."

## Southern allure

Already the major trading partner of Latin American countries, the U.S. may benefit from a thriving demand for technology in the southern countries, according to the International Trade Administration

	Number of telephones per 100 inhabitants	1989 U.S. trade balance (in millions of dollars)	Projected market growth rate (hardware/software)
 Argentina	8.3	\$(389)	20% / 20%
 Brazil	6.5	\$(5,103)	20% / 18%
 Chile	6.0	\$50	10% / 30%
 Colombia	5.9	\$(600)	6% / NA
 Venezuela	7.8	\$(3,750)	15% / 30%
 Mexico	7.4	\$(3,000)	18% / 20%

Source: Guide to Computer Hardware and Software Markets in Latin America, International Trade Administration

CW Chart: Doreen St. John

width back to the user, he added.

Global garment manufacturer Benetton Group S.p.A. employs a General Electric Information Services network to maintain information flow among its subsidiaries, foreign plants and agents in 23 countries. However, "We don't communicate with our company in Brazil, although we would like to, because gateways are too costly," said Bruno Zuc-

firm has been testing SNA equipment manufactured by a Memorex Telex N.V. subsidiary in Brazil but has no guarantee that such equipment will interoperate with Memorex Telex equipment manufactured in Argentina, she said.

The good news is that the newly elected Brazilian government recently said it would lower trade barriers, including im-

## Going private

Mexico, Brazil, Chile and Argentina are at the head of a trend that might be described as "Latin American Glasnost."

The administrations in those countries are "putting aside nationalistic tendencies to attract investments and grow," said Grady Means, chief economist at Coopers & Lybrand.

About four years ago, Chile began the trend of privatizing various state-owned companies, including transportation, post offices and most recently, telephone companies.

Chile has sold off its telephone company to a consortium that includes Telefonica de Espana and The Chase Manhattan Bank N.A. Argentina is on the verge of consummating the sale of its telephone company, Entel, to two separate consortiums: one led by J. P. Morgan & Co. and the other by Citicorp. The Mexican government recently announced the three final bidders for Telefonos de Mexico (Telmex).

Such moves are likely to benefit all parties involved, including users. The governments gain a much-needed infusion of cash and, in the case of Argentina and Chile, forgiveness of some of their debts to U.S. banks. Argentina will receive \$100 million in cash and \$2.3 billion of the debt it owes J. P. Morgan in return for the northern part of its telephone company, J. P. Morgan spokesman Joseph Evangelisti said.

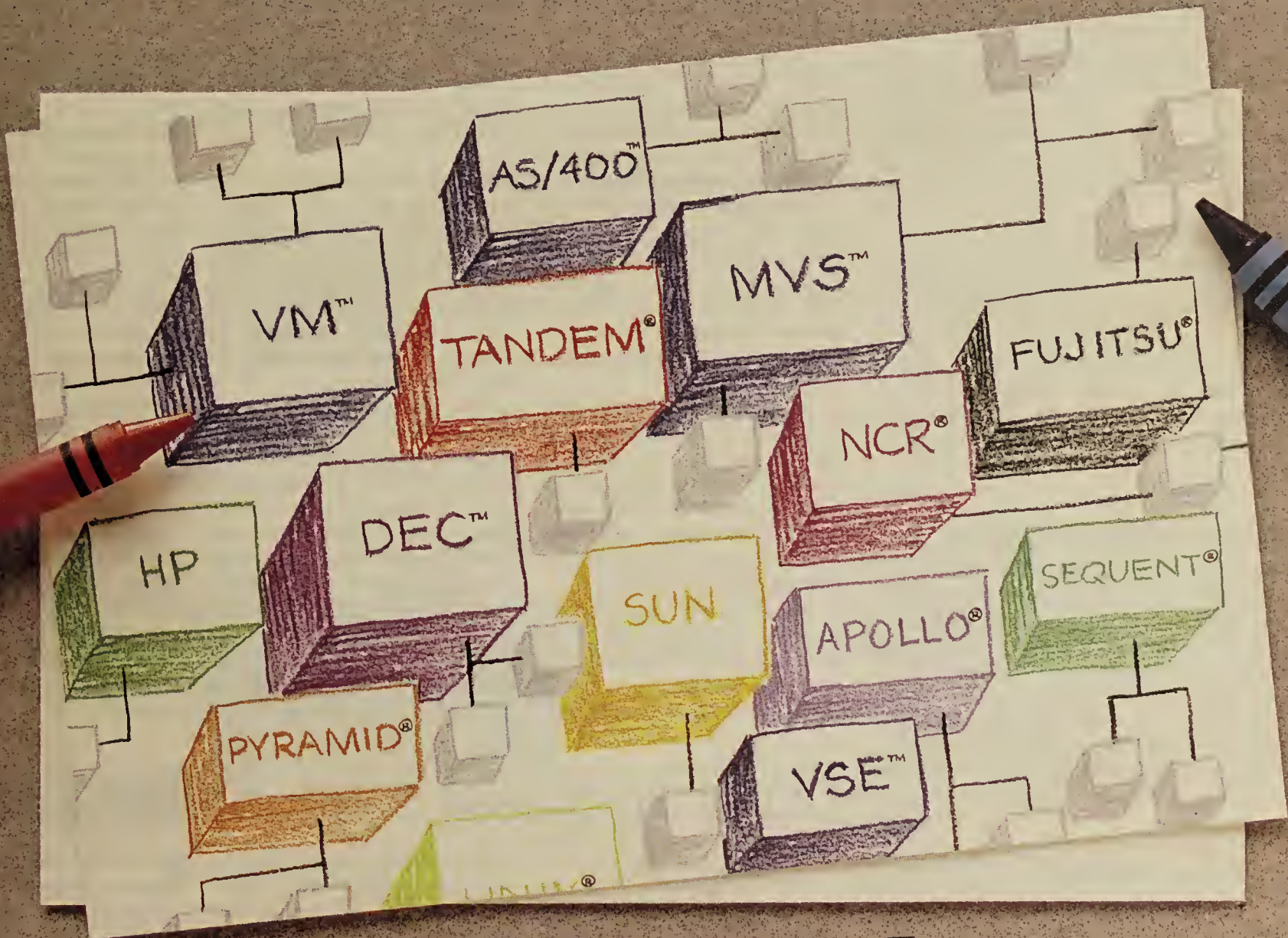
The governments can also hand the burdensome responsibility of running the telephone network over to owners with the funding and expertise to give it a much-needed overhaul.

The Mexican government laid out in its operating license for Telmex certain minimal improvements that the new owners must make to keep the license, said Raoul Robledo, director of international projects for Banco International, the government's agent in the bidding process.

ELISABETH HORWITT



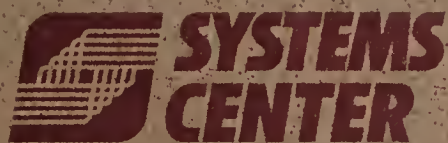
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## NEWS SHORTS

### Mattson joins Gillette

Information systems executive David E. Mattson lost one job because of a corporate merger, but he recently found a new one at a company that successfully resisted a takeover attempt. Mattson, the former director of MIS planning at Sterling Drug, Inc., has joined Gillette Co. as director of corporate systems development. He reports to Gillette's top IS executive, Vice President Herbert W. Moller. Mattson left New York-based Sterling Drug earlier this fall after his position was eliminated in a reorganization related to Sterling's 1988 acquisition by Eastman Kodak Co. Gillette, on the other hand, was able to rebuff last year's takeover attempts by an investment group led by Revlon, Inc. Chairman Ronald O. Perelman.

### Pick ported to Avion

Pick Systems announced last week that the Advanced Pick relational database management system has been ported to Data General Corp.'s Unix-based reduced instruction set computing Avion workstations. Under the terms of the OEM agreement, DG will market, sell and support the Pick software through its direct sales force and through Pick resellers targeting vertical market industries. In a separate announcement, DG said that the Avion family now supports the Informix Software, Inc. Wingz spreadsheet.

### IS rides out Continental problems

Company spokesmen said the Chapter 11 filing by Continental Airlines Holdings, Inc. caused nary a ripple at the IS arm of Continental Airlines and System One, the firm's reservations division. They said that no freezes were planned for either equipment purchases or hiring. "I know it's hard to believe, but it's really business as usual," System One spokeswoman Yvonne Donaldson said, adding that System One's proposed deal with Electronic Data Systems Corp. (EDS) was also still alive. EDS spokesman Roger Still said the firms hope for a facilities management contract and a joint marketing agreement.

### Exchange standard backed

The U.S. Department of Commerce called on U.S. industry last week to help implement an international product data exchange standard. The standard is to become a cornerstone of the U.S. Department of Defense's (DOD) Computer-Aided Acquisition and Logistics Support program. The standard, which allows the electronic expression and exchange of all useful information about a product, would be useful to any company involved in computer-integrated manufacturing and concurrent engineering, the Department of Commerce said. The agency said it would work with the DOD to spur research of the technology in the government and the private sectors.

### DEC fleshes out TCP/IP support

As part of its recently announced commitment to supporting Transmission Control Protocol/Internet Protocol (TCP/IP) on its Decnet Phase V architecture, Digital Equipment Corp. announced last week that its Decserver 300 will now support the TCP/IP protocol Telnet, as well as its own Local Access Transport (LAT) protocol. This will allow terminals to concurrently access DEC and non-DEC hosts via either protocol or over Ethernet networks, DEC said. 3Com Corp. also announced Connection Service software for its terminal servers providing the same dual Telnet-LAT host connections.

### DEC, System Industries settle suits

Storage products vendor System Industries, Inc. and DEC last week settled lawsuits centered on DEC's 1989 claim that System Industries' disk- and tape-drive products infringed on DEC patents. System Industries had filed counterclaims charging DEC with violating antitrust laws. Under the settlement, System Industries agreed to phase out sales of products covered by several DEC interface patents and to compensate DEC. In return, DEC agreed to provide System Industries with alternate means for attaching its products to future DEC systems.

*More shorts on page 123*

## Nynex carriers to allow rivals shared access

BY ELISABETH HORWITT  
CW STAFF

The New York and New England Telephone companies said last week that they would allow alternative access providers to co-locate transport equipment in their central offices as a way to give their rivals access to the regional Bell operating companies' (RBOC) network facilities.

The announcement paves the way for "disaster-sensitive" metropolitan-area businesses to finally get the backup services they need, according to Henry Levine, a partner at Washington D.C., law firm Morrison & Foerster.

Co-location would significantly extend the potential market base of alternative providers to companies with some sites outside the providers' fiber-based network, said Marie Brockhurst, a spokeswoman at Metropolitan Fiber Systems, Inc. (MFS).

Currently, MFS and other alternative providers can only connect sites directly over their own fiber connections. Co-location would allow them to sell fiber

links to the regional carrier, which would then direct user transmissions to those sites that MFS does not serve, Brockhurst added. MFS' customer base is now in the "tens," with its oldest rival, Teleport Communications Group, "probably" having a slightly larger revenue base, Brockhurst said.

### Alternative options

Co-location also gives the regional operating companies' Centrex customers the option of using an alternative provider's network as backup facilities, said Jeffrey Marshall, managing director of communications at Bear Stearns & Co.

The New York investment firm currently uses a variety of network providers, including MFS and Teleport Communications, to ensure that its network runs over diverse lines and switching facilities, according to Marshall. Indeed, Bear Stearns became one of the first companies to participate in a co-location arrangement when it set up a direct link to a long-distance carrier through Teleport Com-

munications, "so I am familiar with some of the struggles involved in co-location," Marshall said.

Alternative providers such as MFS and Teleport Communications compete against the RBOCs in a narrow but lucrative market segment: Fortune 500 companies that are looking to back up rather than replace their regional carriers, Levine said. However, alternative providers have been handicapped by their dependence on their rivals for access to long-distance carriers, as well as to the regionals' much more extensive customer base.

The Nynex Corp. companies' announcement has potentially broad implications for users in other parts of the country, Levine said, because it takes all the force out of past arguments by Nynex and other regional holding companies, which said co-location was impossible and inappropriate.

To date, the two Nynex RBOCs, in addition to Bell Atlantic's New Jersey Bell, may be the only regional carriers to provide any type of direct link to alternative providers, Levine said. Teleport Communications and MFS are both actively negotiating with Pacific Bell to provide "some sort of virtual but not physical co-location," Brockhurst said.

## Claris checks out Windows applications

BY JAMES DALY  
CW STAFF

SANTA CLARA, Calif. — Apple Computer, Inc. is using its Claris Corp. software division to produce applications for Microsoft Corp.'s red-hot Windows 3.0 package, a competing product that replicates the once-unique screen appearance of Apple's Macintosh personal computer.

Analysts have long speculated that Apple abandoned long-standing plans to spin off Claris into a separate business unit earlier this year because it feared Claris would focus on building applications for the success of Windows 3.0, which Microsoft said has sold more than 1 million units since being introduced in May.

"There has always been a misconception that we brought Claris back to prevent them [from] building a Windows product; we want a Windows product," Apple Chairman John Sculley said last week at a forum here hosted by Technologic Partners.

While Sculley admitted that Windows development "will not be Claris' great mission," Claris executives said the rapid success of Windows 3.0 has made it difficult to ignore. "We no longer believe that Windows will go away," said Yogen Dalal, vice president of product development at Claris.

Dalal added that Windows development efforts "are still a little squishy," but initial work would most likely focus on porting existing Claris products such as the Macwrite word processing application, Filemaker database management software and the Macdraw graphics package to Windows.

Later undertakings could entail the creation of entirely new applications, he noted. "We want to avoid addressing users

on a lowest common denominator basis," he said.

Users were enthusiastic at the possibility of Claris developing for Windows. "We'd love to see a package that could span both DOS and Apple, because it would really ease the pain of integrating the two environments," said Mary Howlett, manager of management information technologies at Hughes Aircraft Co.'s ground systems group in Fullerton, Calif.

## Sun to limit releases to CDs

BY J. A. SAVAGE  
CW STAFF

SAN JOSE, Calif. — By the end of 1991, Sun Microsystems, Inc. will no longer distribute new software releases on media other than compact disc.

Donna Novitsky, group marketing manager at Sun, announced at the 8th Annual Sun User Group meeting here last week that the company would promote CD drives by offering one free drive with two years' service/support contract — if the pack was paid for up-front.

While several vendors offer documentation or software on compact disc/read-only memory (CD-ROM) discs, Sun is apparently the first mainstream sys-

tems supplier to make it a requirement and refuse to ship tapes or disks. Next Computer, Inc. initially shipped its systems with a CD-ROM instead of a hard drive but revised that policy when it ran into user opposition.

Sun users who said they have seen the firm suddenly drop other endeavors or product lines groaned but appeared to take the announcements in stride.

"Drives are cheap," said Doug Kingston, a systems administrator at Morgan Stanley & Co. "For about the price of a box of tapes, you can get a drive." Kingston priced the drive at approximately \$1,000. "The rub will be the one- and two-man shops, then \$1,000 will be a lot of money."



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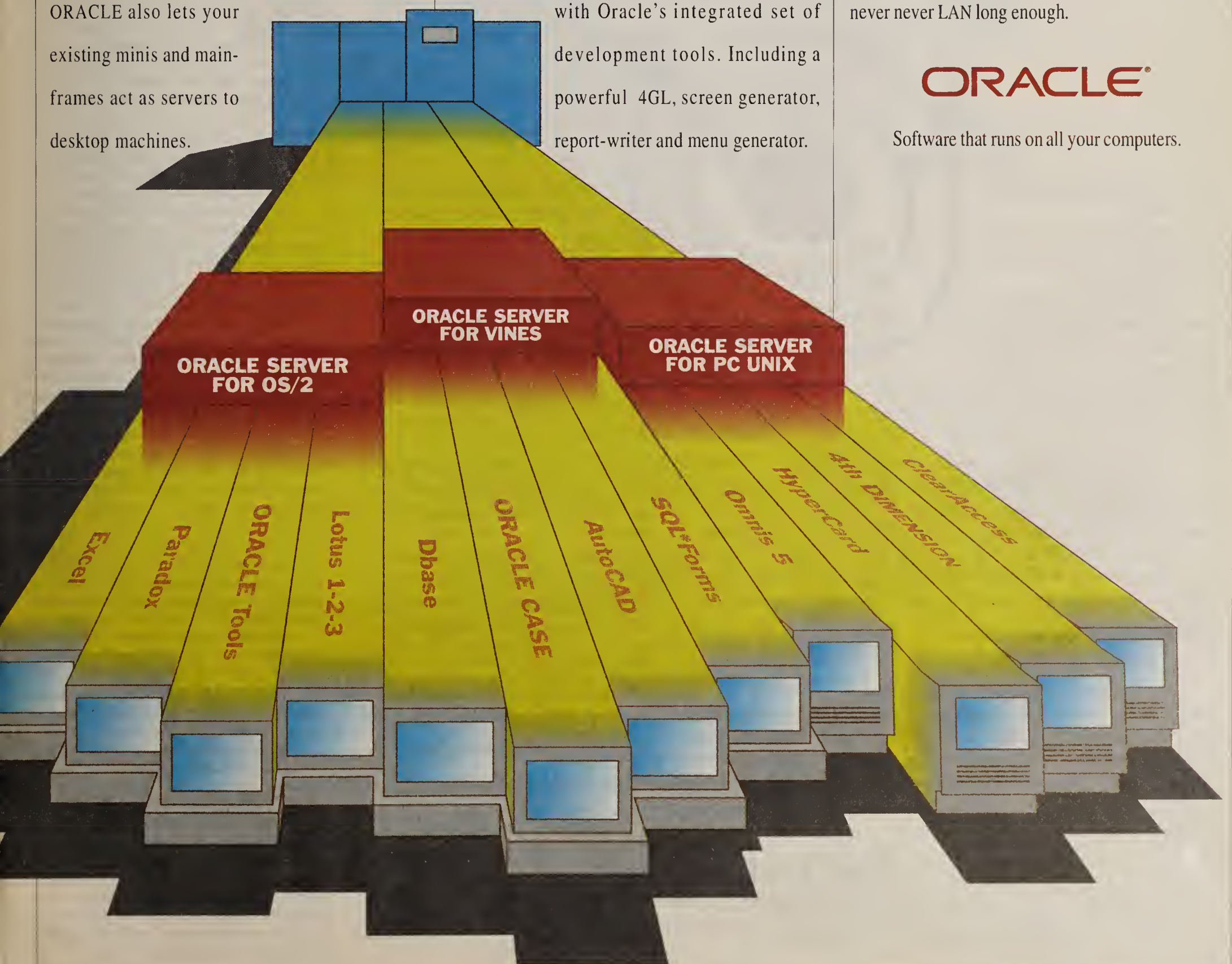
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## NASA refutes hacker break-in story

BY MICHAEL ALEXANDER  
CW STAFF

HOUSTON — A National Aeronautics and Space Administration (NASA) spokesman angrily denied a published report last week that computer hackers rang up a \$12 million telephone bill over a two-year period after compromising a private branch exchange at the Johnson Space Center.

"We strongly disagree with the dollars," said Steve Nesbitt, a public information officer at the Johnson Space Center. The \$12 million figure is twice what Johnson Space Center paid in telephone

charges over the past two years, he said. "Our entire bill per year is only \$3 million, and that serves the legitimate needs of 10,000 users," Nesbitt said.

The *Houston Chronicle* said the \$12 million figure was "extracted from costs of similar break-ins around the nation described by law enforcement agents specializing in computer crime."

An Arizona assistant attorney is quoted in the *Chronicle* article as having said that hackers typically ring up illegal charges of \$100,000 per month at small firms and \$500,000 per month at large firms.

Assuming the unknown hackers used

NASA's telephones for two years, the agency could have lost service worth as much as \$12 million, based on the assistant attorney's valuation, the newspaper said.

Officials at the space center said they are willing to believe that hackers were able to get into the Federal Telephone System, a dedicated telephone service for government employees, through the space center, but they added that the cost of the intrusions was probably less than \$10,000.

While investigating the break-in, NASA officials discovered that one of its AT&T calling cards had been fraudulently used to ring up \$9,600 in charges. "That is the only theft that we have been able to verify," Nesbitt said.

## Carriers offer ISDN alternate

BY JOANIE M. WEXLER  
CW STAFF

The most sought-after Integrated Services Digital Network (ISDN) application is now available *sans* the ISDN price tag from two major long-distance carriers. This scenario could tide users over through tough economic times until they can make the equipment and service investments the technology requires.

U.S. Sprint Communications Co.'s recent bundling of an automatic number identification service with its Ultra 800 offering joins MCI Communications Corp.'s service and leaves only AT&T customers out in the cold for getting caller identification capabilities without investing in ISDN. Automatic number identification is the ability of a network to notify the called party of the caller's and/or directory listing.

Aside from potential equipment upgrades, ISDN services carry hefty per-connection installation and monthly service fees. Sprint and MCI are also actively marketing ISDN, and analysts see the recent offerings as both another stumbling block and a potential migration path to full-blown ISDN technology.

"If the carriers offered only ISDN [automatic number identification] [like AT&T], they would encourage the use of ISDN," commented Steve Sazegari, an analyst at Dataquest, Inc., a market research firm in San Jose, Calif. "However, ISDN is currently considered a luxury and is on the back burner for many firms."

"Having a cheaper way to do [automatic number identification] could prove its usefulness to would-be ISDN users," countered H. Paris Burstyn, vice president of telecommunications at Newton, Mass.-based Business Research Group.

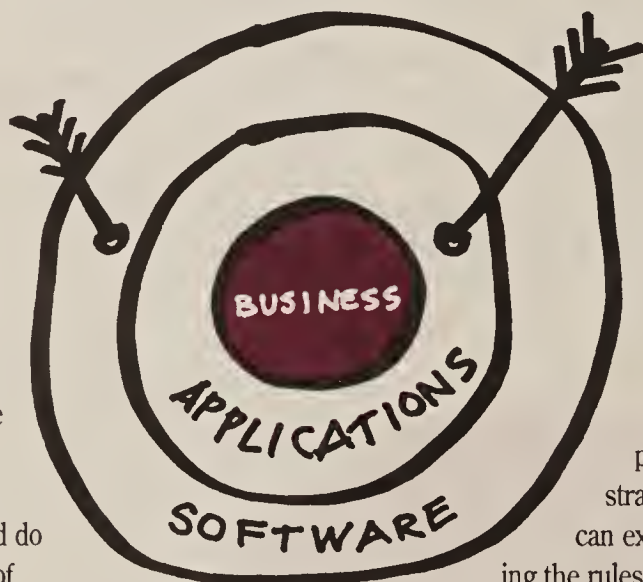
"If all you're looking for is [automatic number identification], ISDN is a poor choice," commented Sanjeev Malaney, president of Mediatel Corp., a service bureau in Campbell, Calif., that has been beta-testing Sprint's non-ISDN automatic number identification service since September. "Why spend the money [for ISDN] if the only ISDN capability you need is [automatic number identification], and you can get it on existing equipment?"

Mediatel uses a homegrown voice response system for its business, and Malaney said the investment in an ISDN-capable private branch exchange alone would currently be prohibitive for him.

Frank McConnell, director of telecommunications at Colonial Penn Group, Inc. in Philadelphia, said that as soon as he heard Sprint had rolled out non-ISDN automatic number identification, he got on the phone to his long-distance carrier, AT&T, and "demanded to know if they had it and if not, when they were going to get it."

AT&T has reportedly remained adamant in requiring users to subscribe to ISDN Primary Rate Interface service for automatic number identification. That is one reason Mediatel uses Sprint, Malaney said. "We refuse to be bullied by the company into using ISDN just for [automatic number identification]." AT&T was unavailable for comment at press time.

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# Microsoft buys into natural-language interfaces

BY JEAN S. BOZMAN  
CW STAFF

BERKELEY, Calif. — Microsoft Corp. plans to incorporate natural-language interface options into its next generation of personal computer software, Microsoft Chairman Bill Gates said last week. However, the company does not expect English to replace point-and-click graphical interfaces any time soon.

Microsoft hedged its bets last week by increasing its holdings in Berkeley-based Natural Language, Inc., to 10%. Microsoft has the right to use Natural Language's technology in its future products.

The investment comes three months after IBM announced its own natural-language interface for database query, IBM SAA Language Access, which will be available by June 1991.

Natural-language interfaces allow users to request data in English, with the computer translating the queries and prompting the user for more detailed information if necessary. While future Microsoft products may offer the natural-language interface as an option for certain applications, the keyboard-driven interfaces are not meant to replace graphical user interfaces such as Windows, Gates said.

In the short term, industry analysts said, Microsoft's and IBM's investments will not change the niche nature of the fledgling natural-language business. However, Gates said the natural-language interface holds promise for the next generation of Intel Corp. i486-based desktop workstations.

Currently, products made by Natural Language and its primary competitor, Intelligent Business Systems, Inc., in Milford, Conn., run on Digital Equipment Corp. VAXs, Sun Microsystems, Inc. workstations and other Unix computers. AI Corp. in Waltham, Mass., also sells natural-language query systems for mi-

drange and mainframe computers.

"As personal computers become more powerful, there will be a lot of cases where the natural-language interface will be superior," Gates said.

Gates called the investment a long-term strategic move by Microsoft. "This is high-end stuff," he said. "This investment wasn't made thinking that something was going to explode [in this area] in the next 12 months."

Some of Natural Language's 100 user sites reported that the interface can work well for certain classes of end users who may feel uncomfortable with point-and-click interfaces for database query. "There's a comfort factor in this," said Ron Bleed, vice chancellor of information technologies at Maricopa Technical Community College in Phoenix, which uses Natural Language's products on its VAX 6400s. "In our end-user community, college advisers, faculty and administrators are used to dealing in words." However, Bleed said, the college system has invested much more heavily in PC software that has graphical user interfaces.

Natural Language has received \$12.4 million in venture capital funding since 1984, while Xerox Corp. and Ing C. Olivetti & Co. have invested \$26 million in Intelligent Business Systems, which makes the competing Easytalk interface. Intelligent Business Systems has about 25 sites, compared with Natural Language's 100 sites worldwide; neither company has annual sales of more than \$5 million.

In the PC market, the dominant natural-language query product is Q&A, made by Cupertino, Calif.-based Symantec Corp. Q&A runs against a proprietary database and works with less than 512K bytes of memory. Symantec said it has sold more than 300,000 units of the \$350 MS-DOS based product since 1985.

In contrast, prices for the Natural Language and Intelligent Business Systems products range from \$3,000 per unit to \$100,000.

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## Oracle moves to deter takeovers

REDWOOD CITY, Calif. — Oracle Systems Corp. has created a "poison pill" designed to fend off any hostile takeover attempts, the company said last week. Oracle's board of directors approved a stockholder rights plan that gives shareholders the option to buy additional Oracle stock at a fraction of its market value. That option is triggered if an outside group acquires 20% of Oracle's stock. The plan goes into effect on Dec. 31.

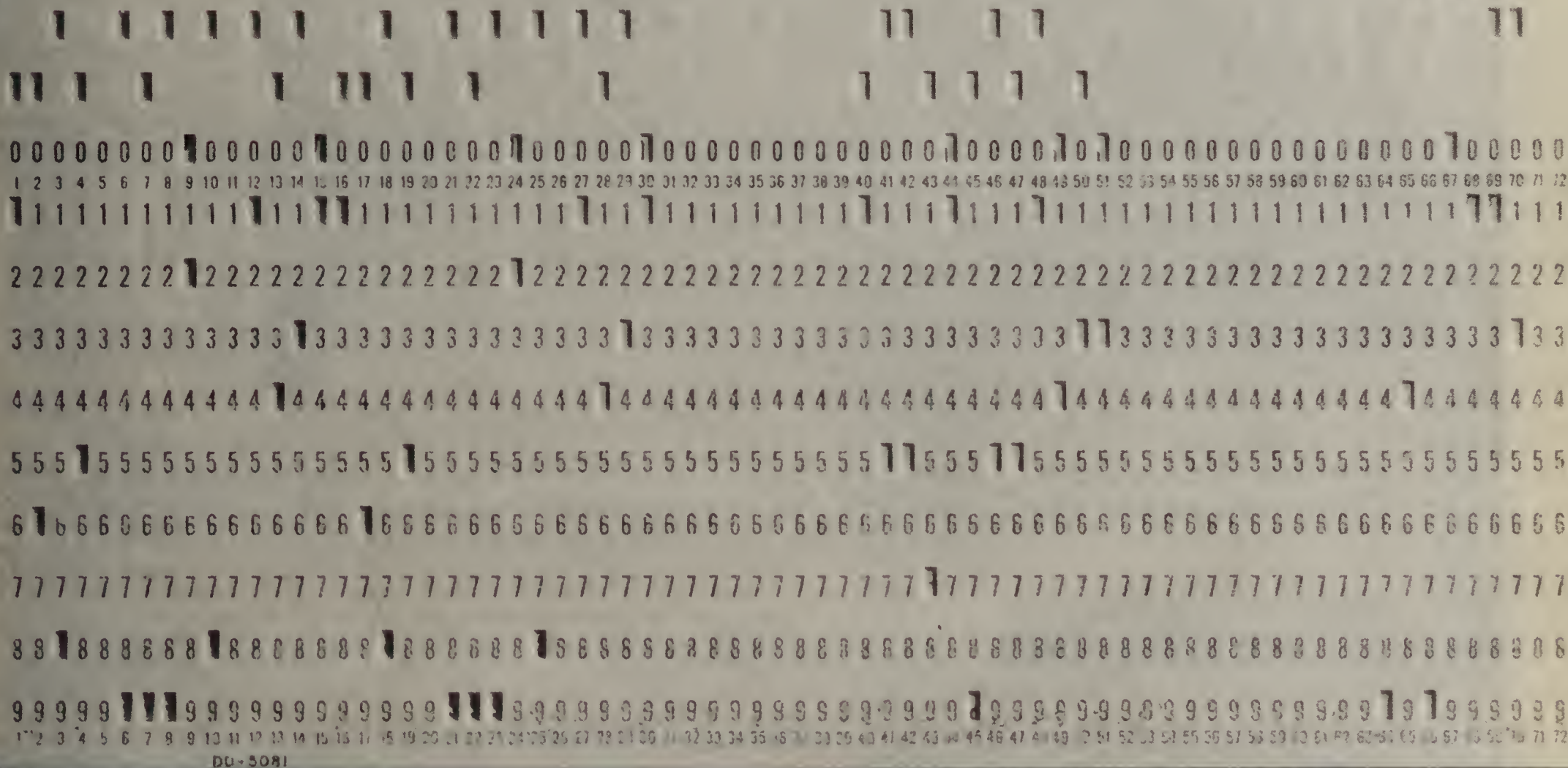
"You don't want to allow a raider to accumulate a lot of the stock before your board [of directors] has a chance to act," said Michael Musson, director of investor relations at Oracle. "You want to have a plan in place that forces the acquiring party to negotiate with your board."

The plan was designed to delay any takeover attempt, giving the board time to find another buyer or bargain for a higher price, Musson said. At week's end, Oracle stock was trading for less than \$8 per share.

At the same time, Oracle announced that it had named George Paul Dreyer as president of its subsidiary Oracle Complex Systems Corp. in Arlington, Va.



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# Five HP minicomputers debut

BY J. A. SAVAGE  
CW STAFF

CUPERTINO, Calif., — Hewlett-Packard Co. filled in its mini-computer lines with three Unix-based systems and two models based on its proprietary operat-

ing system last week.

Adding Models 948 and 958 to the high end of the company's Series 3000 line of midrange systems that run the proprietary MPE/XL operating system leaves HP with midrange mini-computers extending from the

low end at 5.7 trans/sec. for \$26,000 with the Model 920 to 38.6 trans/sec. for \$245,000 with the new Model 958, according to the company. Users can upgrade among models in this range with a board swap.

Barry Zarakov, director of

corporate information services at Pip Printing International in Agoura Hills, Calif., said the introductions make him more comfortable that there is room to grow from his Model 925 with only a board swap. "Board swaps are obviously an easier creature to deal with," he said.

With the new introduction, the price per trans/sec. is now below \$20,000, according to

Wim Roelandts, vice president and general manager of HP's Computer Systems Group.

"Less than a year ago, it was \$30,000 to \$35,000," he said. The figure is based on the Transaction Processing Council's estimate of the cost of five years of ownership, and it includes terminals, memory, disks, software and maintenance.

The company also rolled out three Unix-based models. In the lower end of the range, users can go from the 11 million instructions per second (MIPS) Model 822S, which costs \$27,900, to the 52 MIPS Model 852S, priced at \$143,000, with a board swap.

The Model 842S was also introduced with a processing speed of 29 MIPS and a price of \$85,000. HP filled in the middle of its high-range Unix-based computers with the Model 865S, which runs at 53 MIPS and costs \$275,000.

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## CGI buys Yourdon

BY ROSEMARY HAMILTON  
CW STAFF

CGI Informatique, the Paris-based computer-aided software engineering (CASE) company last week acquired Yourdon, Inc., a company founded by Ed Yourdon, the man who established the popular Yourdon CASE methodology.

The move should give CGI a boost in the U.S. CASE market. The company will pick up more than 250 users in North America, which is twice the amount of CGI users in Europe.

The acquisition will also provide CGI with a set of front-end tools that, in some cases, overlaps its current lineup. Yourdon sells a personal computer-based design tool and a code generator. CGI Systems, Inc., the U.S. subsidiary of CGI Informatique, markets a repository-based full life cycle tool set for mainframe and local-area network-based CASE development.

According to Richard Ramsdell, president of CGI Systems, the plan is to provide support for Yourdon users. However, the long-term goal will be to move them to the CGI environment.

He said CGI will provide a data transfer interface but added "we don't anticipate building a totally integrated connection."

The company will also give Yourdon users a break on licensing the CGI system. "We will probably give them the benefit of the price they've already paid [for the Yourdon tools]," Ramsdell said. The Yourdon tools are based on the Yourdon Structured Method, which approaches CASE from a process point of view.



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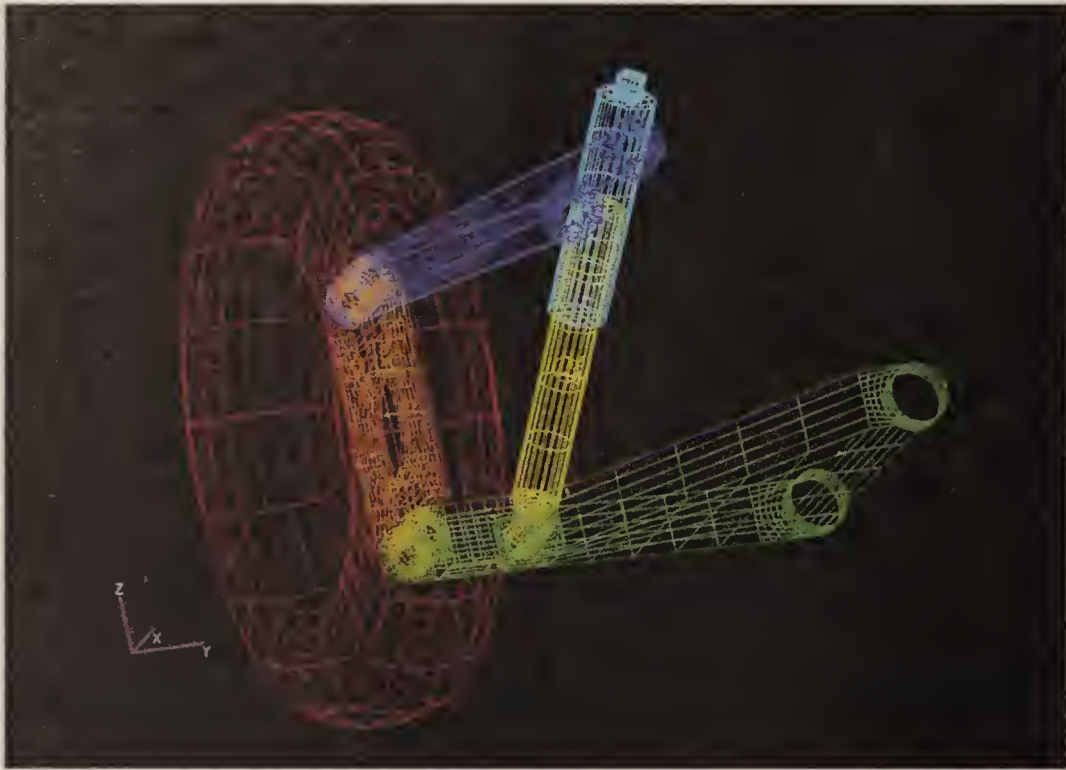
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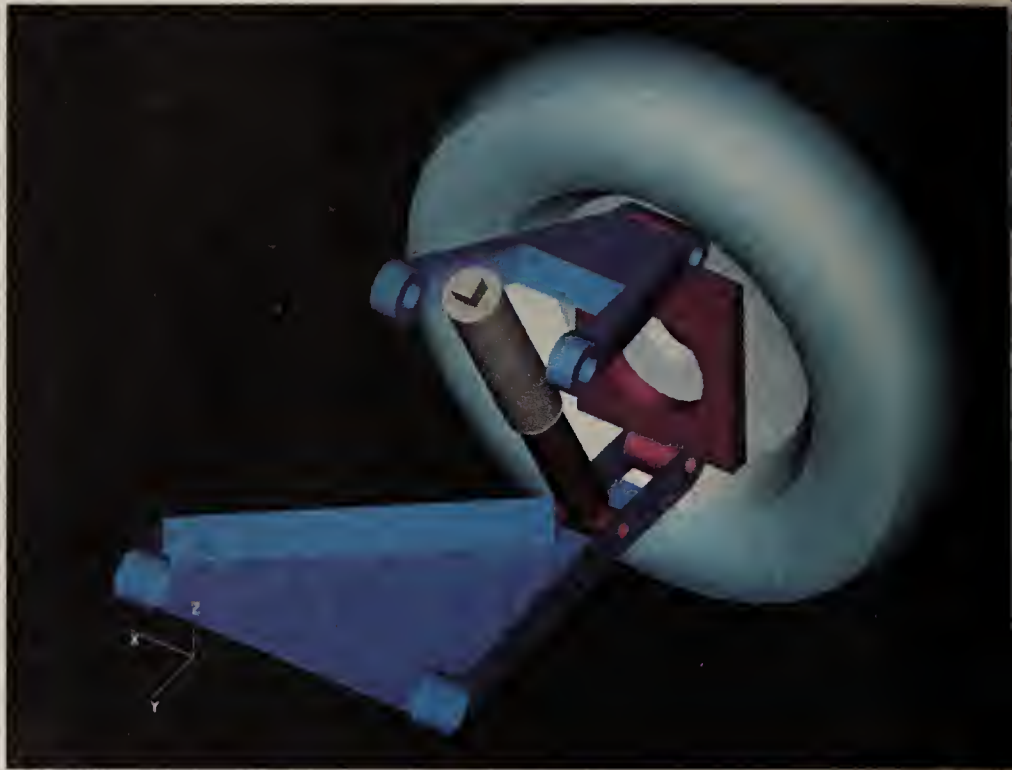
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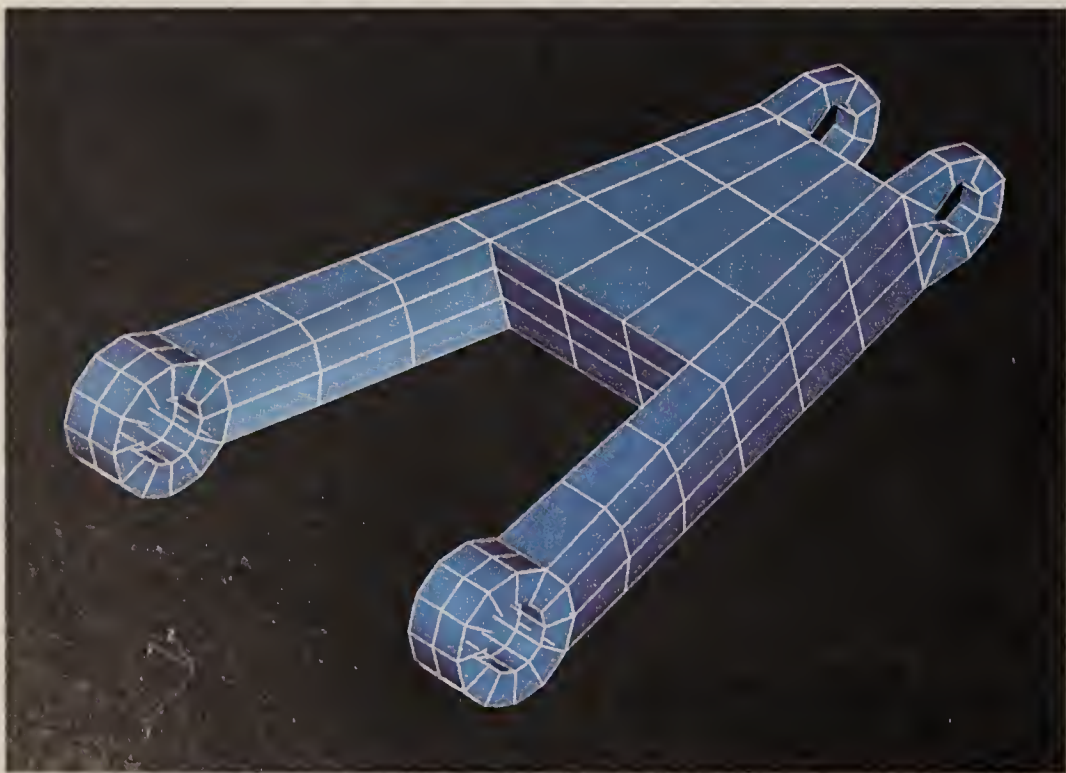
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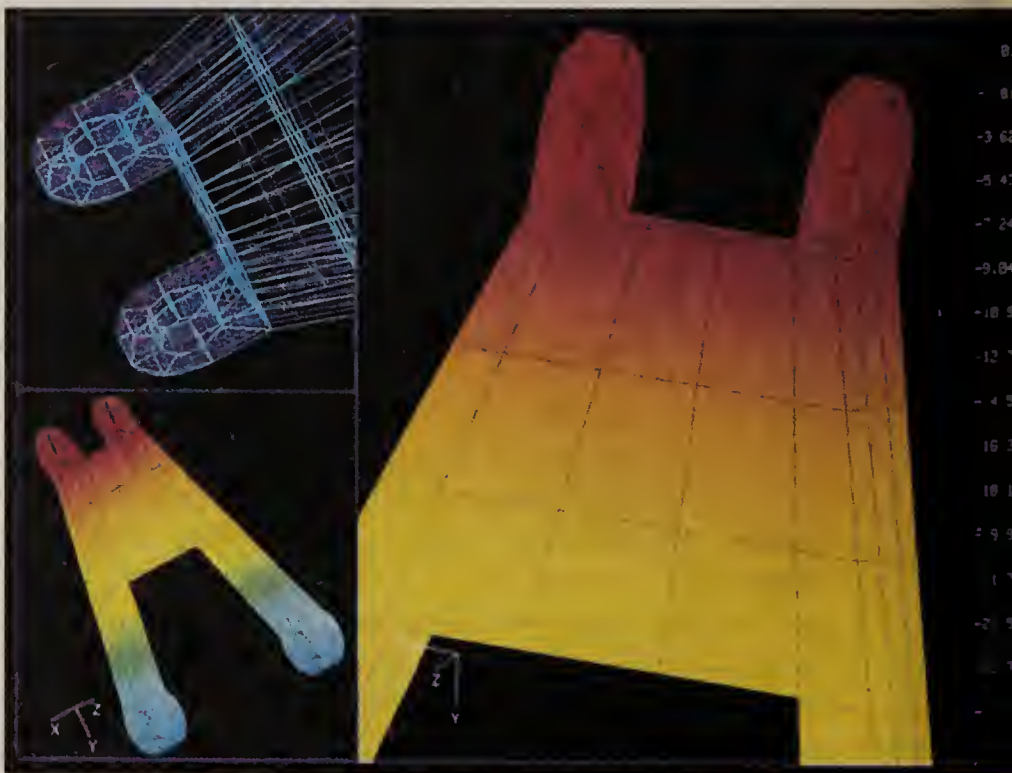
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# Microsoft aims for desktop document standard

BY RICHARD PASTORE  
CW STAFF

Suppose you could embed a Lotus Development Corp. 1-2-3 spreadsheet into an Aldus Corp. Pagemaker document and link them together so a change to the spreadsheet would automatically be reflected in the Pagemaker text. This "compound document" could also travel as a single unit across a network. And the live links would be invisible to the user, who would only see a single document.

This idealistic scenario will become reality if Microsoft Corp. can convince enough third-party applications develop-

ers to support its latest effort to set a desktop computing standard.

Microsoft expects more than 200 developers to attend a conference today to receive copies of its new compound document specification, dubbed OLE, for Object Linking and Embedding. Among those expected to announce support for the Windows 3.1-based OLE are Lotus, Wordperfect Corp., Aldus, Micrografx, Inc. and Borland International. "If you've got a word processing document that contains a spreadsheet brought in from Lotus [1-2-3] or [Microsoft's] Excel, it makes sense to work on the spreadsheet" data without having to manually load the appli-

cation, said Michael Drips, senior strategist at U.S. Sprint Communications Co.

Because of the popularity of Windows, Drips thinks OLE will become a standard.

In the past, various applications have made it possible to "hot-link" and embed portions of one application into another, but only with applications specifically modified. For instance, linking is already possible between certain Lotus and Wordperfect applications.

Interleaf, Inc. is incorporating a similar capability, active documents, in the next release of its publishing software due to ship this month. However, the feature is for Unix-based systems, and Interleaf is

not pushing its technology as a standard.

But Microsoft seeks to widen the scope of this capability to all applications on all personal computer platforms.

"We can already do [linking] between our own applications, but this is a lot smoother," said Chuck Middleton, director of OS/2 and Windows Development at Wordperfect. "Microsoft seems to be the logical company to start a move toward standardizing that capability."

The next major releases of Microsoft's own Windows-based applications will support OLE, according to Darryl Rubin, vice president of application strategy. Microsoft also plans to adopt OLE for Apple Computer, Inc.'s System 7 when it is released and for OS/2 with Presentation Manager "at a later date," Rubin said.

## Morris looking for new ruling

BY MICHAEL ALEXANDER  
CW STAFF

NEW YORK — Seeking to overturn the January 1990 conviction of Robert T. Morris for creating a worm program that immobilized computers on the Internet computer network, his attorney argued in federal appeals court last week that Morris did not deliberately set out to cause harm.

Thomas Guidoboni, the Washington, D.C., attorney who defended Morris, told the panel of three judges in oral arguments he understood the law to mean that the government had to prove Morris intended to access the computer systems and cause the harm that resulted from paralyzing thousands of computers for up to three days in November 1988. In his trial, held in Syracuse, N.Y., last January, Morris said a programming error caused the worm program to replicate out of control and clog the memories of the computers that were attacked.

Guidoboni also said Morris did not break into the computers but merely exceeded a right to use the computers while attending Cornell University as a computer science graduate student in 1988.

Ellen Meltzer, one of two government attorneys who prosecuted the case, argued that the law clearly does not require the government to prove the intruder intended to cause harm.

In an interview, Guidoboni said the issue of intent was both familiar and evident to the judges. The second argument, that Morris had a right to use the computers but exceeded his privileges, was more technical and thus may not have been as readily grasped by the judges.

The second U.S. Circuit Court of Appeals in New York is expected to prepare a written statement and issue a decision, probably within four to six months, Guidoboni said.

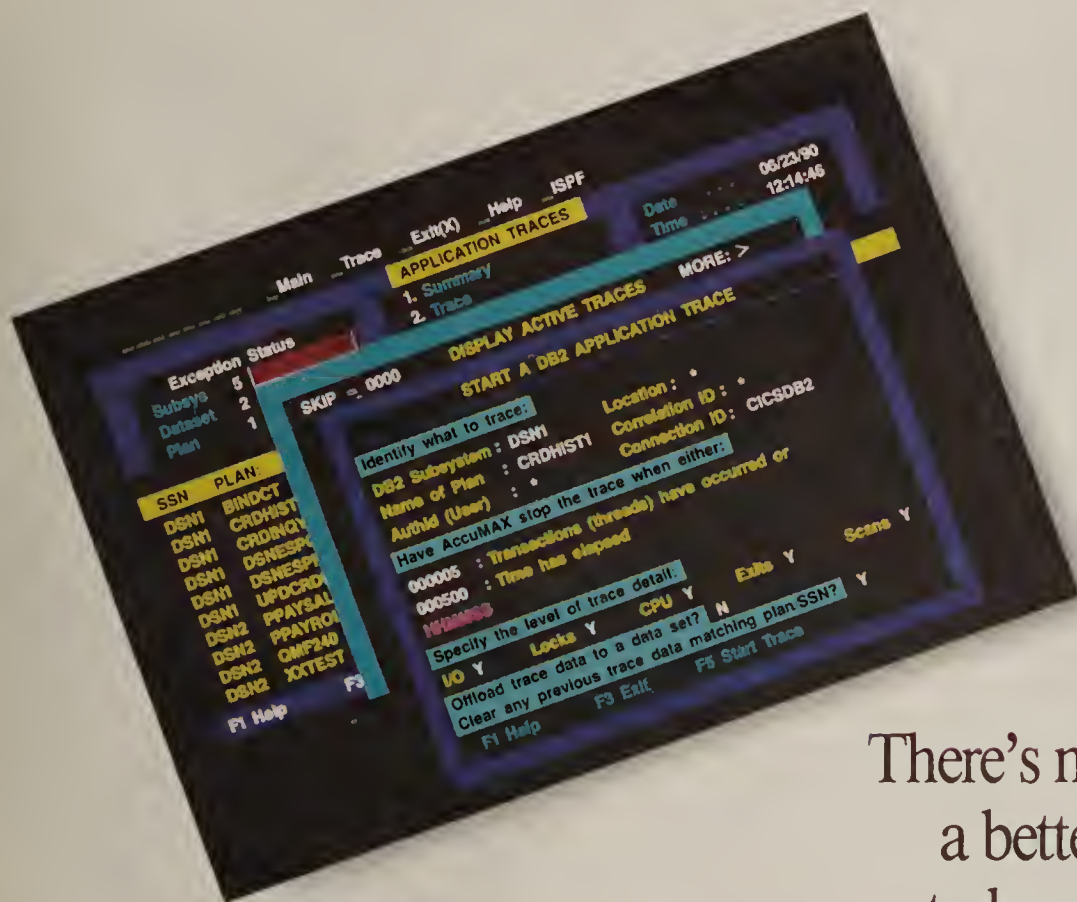
Morris, 25, was the first person brought to trial under a section of the Computer Fraud and Abuse Act of 1986 that makes it a felony to break into a "federal interest" computer and prevent its authorized use. He was convicted and sentenced to three years' probation and 400 hours of community service and was fined \$10,000. He has been fulfilling his community service requirement by working part-time at the Boston Bar Association.

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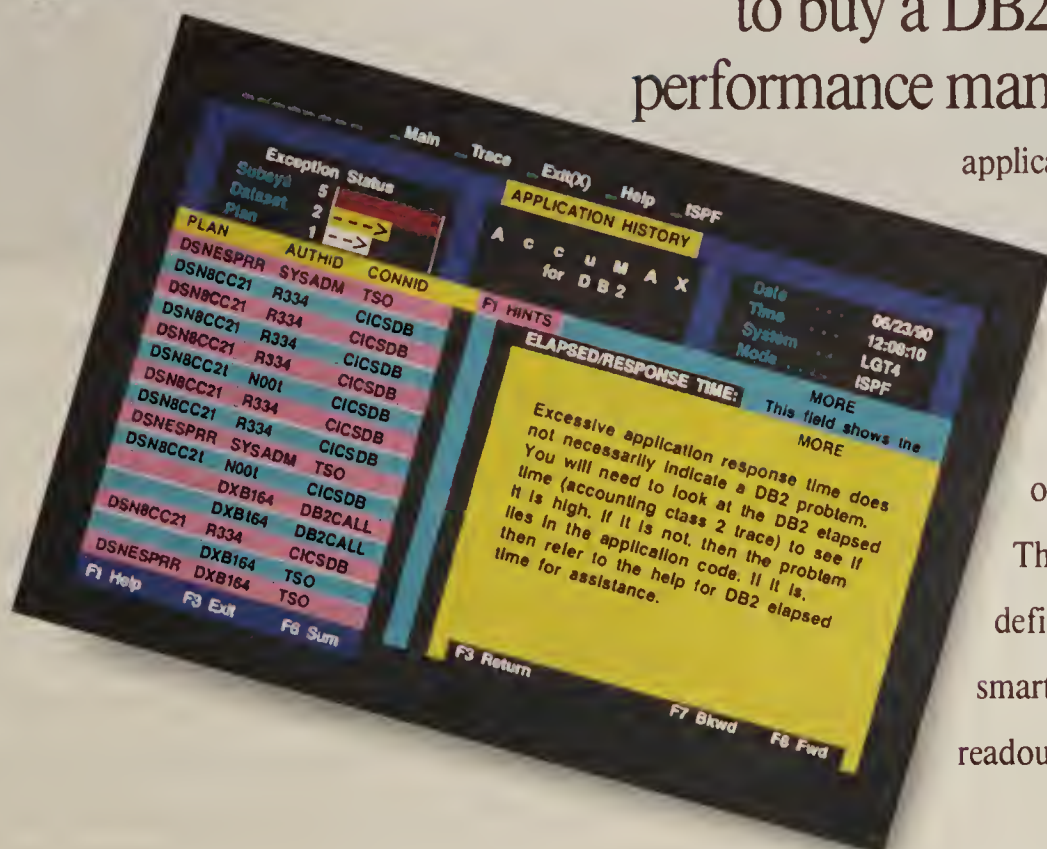
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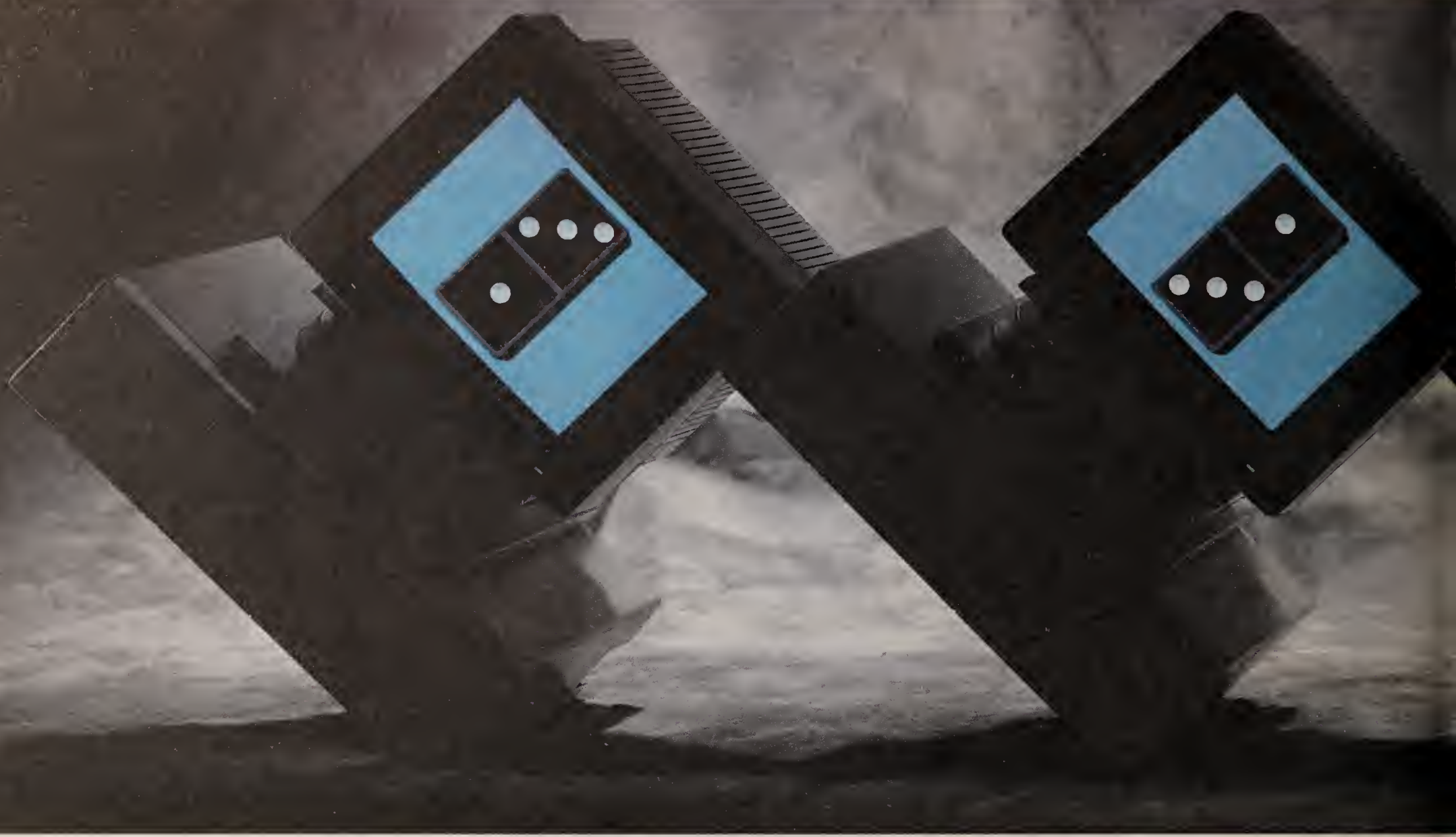
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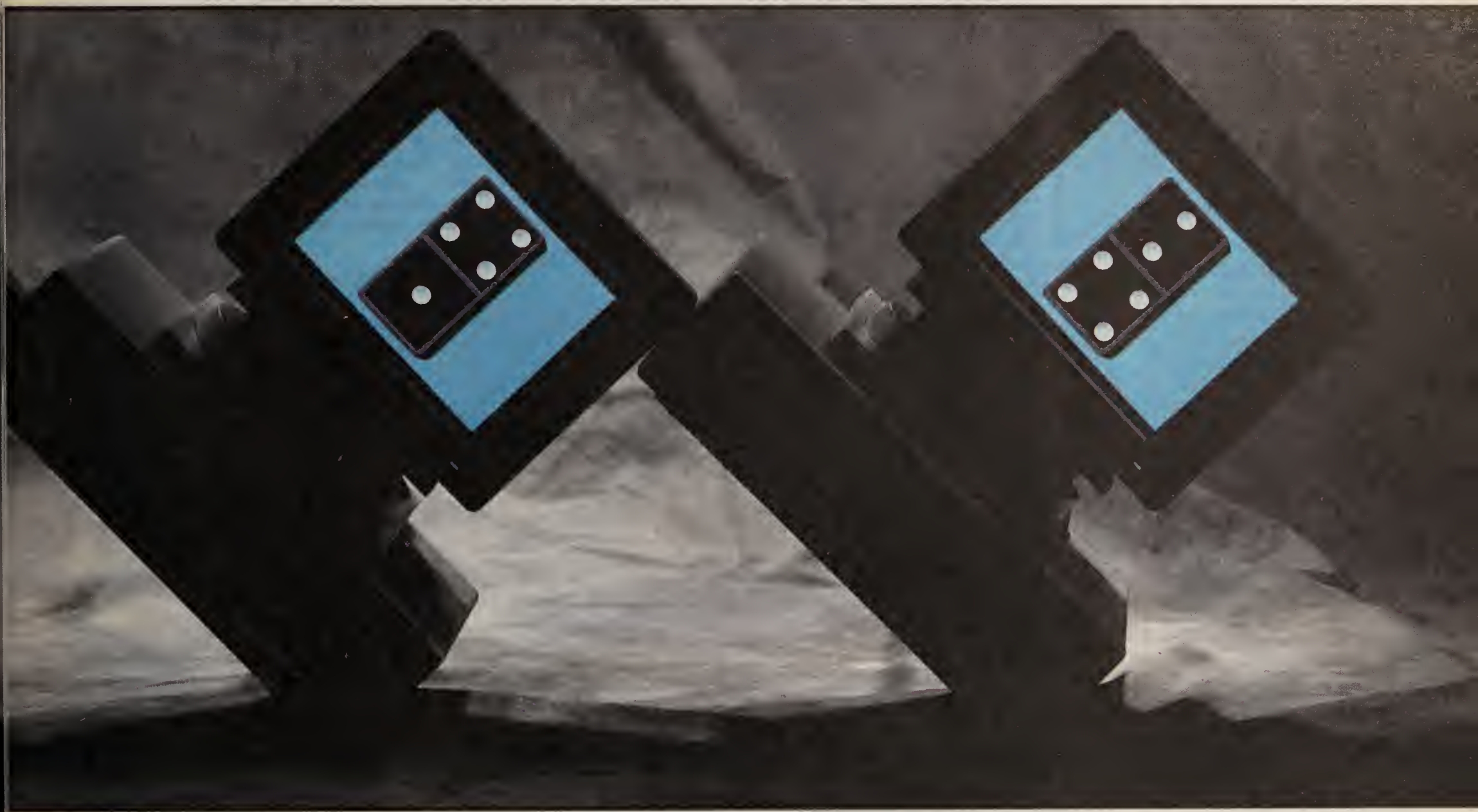
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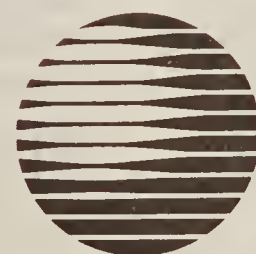
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# ADVANCED TECHNOLOGY

## TECH TALK

### New from NCR

■ NCR Corp. is showing off what it said is one of the first commercially available manufacturing cell control systems based on Open Systems Interconnect standards. The cell control system is also one of the first to integrate Unix Version 3 and Manufacturing Automation Protocol (MAP) 3.0, the company said. The system is aimed at manufacturers who want to integrate shop-floor devices made by a variety of vendors, according to Ray Chagnon, director of manufacturing industry marketing. NCR will market the cell control system under an agreement with AEG, Inc., based in Germany. The German firm will market MAP hardware and software and a programmable logic controller.

### Mobile money machine

■ Anyone who uses an automated teller machine (ATM) must wonder what people did before cash dispensers were invented. ATMs have become so popular, in fact, that First Citizens Bank and Trust Co. in South Carolina has decided to put one on wheels to make the rounds of country fairs, racetracks and other places where cash-hungry hordes are apt to gather. The mobile ATM, an NCR 5084 cash dispenser, is housed in a two-ton truck equipped with dial-up telephone line and satellite antenna system.

### Brainy chip

■ Local operating networks using an inexpensive device called a neuron chip will make it possible to automate everything from security systems at home to energy-saving thermostats at the office. At least, that is the plan of A. C. "Mike" Markkula Jr., ex-chairman of Apple Computer, Inc., and M. Kenneth Oshman, co-founder of Rolm Corp., now jointly owned by IBM and Siemens AG. The two Silicon Valley entrepreneurs hope to have the programmable neuron chip implanted in a wide variety of appliances.

## Tackling systems tasks in tandem

*Processors in hybrid computers use cooperative approach to boost performance*

BY GARY H. ANTHES  
CW STAFF

**H**igh-performance computers of the year 2000 are likely to be built from specialized modules employing different architectures, each module performing a task — such as image or speech processing, sorting or encryption — for which it has been explicitly designed. Manufacturers are now beginning to combine specialized engines for better overall system performance, and experts said the trend will accelerate as companies look for ways to distinguish their products in an increasingly standardized world.

Companies have traditionally made their machines more powerful by building faster processors. But as the laws of physics threatened to flatten soaring performance curves, it became a matter of faith that the fastest computers would need multiple processors.

Mainstream companies such as IBM embraced the concept of parallel processing in a limited way, while a few bold companies — often with help from Uncle Sam — went whole-hog with systems having thousands of processors.

While the limits of neither approach are in sight, computer designers are increasingly trying out a third, complementary tack in which heterogeneous systems — computers or groups of computers — employ multiple specialized components, each doing what it does best.

### Super specialized

Last month, the supercomputer unit of Intel Corp. announced the planned delivery of a new generation of its Touchstone computer, an ultra-fast — peak

speed is claimed to be 32 billion operations per second — machine with 528 Intel I860 processors. But Touchstone also uses 42 Intel 80386 processors for I/O and special routers that pass messages between processors at a whopping 40M

byte/sec. Intel plans to add a specialized processor for three-dimensional graphics to the next generation, available in one year.

IBM's recent rollout of the new System/390 included a \$125,000 optional processor specially designed to do the number crunching demanded by data encryption algorithms. Michael Monachino, director of IBM's Mid-Hudson Valley Development Laboratory, said a European bank with the add-on has been able to extend total machine performance by 46% while running programs requiring encryption or decryption.

James Key, assistant director at the University of Maryland's Engineering Research Center, said future supercomputers will have basic architectures with hooks for field additions of modules for graphics, animation, speech input and output, image and

data compression and encryption. Some of these will work in parallel with the CPU, and some will act as front or back ends.

Key said the approach will increasingly be used in mainframes and smaller systems, too. "As we move toward



Paul Mock

standardization, how do you add value? You drop in specialized, application-specific modules." Key said manufacturers will be reluctant to incur the enormous expense of developing new architectures if product differentiation can be achieved some other way.

Key said demand will blossom for image processing in areas such as medical, seismic and satellite photography applications. And users will increasingly want their images animated — something that takes enormous processing power. Even relatively mundane applications such as processing digitized credit-card receipts could benefit from specialized modules, he said.

## Hitachi show is a preview of things to come

BY JOHANNA AMBROSIO  
CW STAFF

**I**f Hitachi Ltd. has anything to do with it, the future will include a programming language that works by animation, an intelligent optical filing system and laptop video cassette recorders.

These and other prototypes were on display at Hitachi Technology 1991, a kind of mini World's Fair held in New York late last month. Walking robots, medical imaging gear, a neural computer with more than 1,100 neurons [CW, Dec. 3] and other futuristic devices filled the arena. Most of what was shown is at least two years away from being offered as actual products in Japan, with U.S. availability coming some time after that.

Especially novel was the Visual Pro-

gramming Language, which allows users to specify a sequence of events using keyboard commands or speech and watch an animated helpmate carry out the prescribed actions on-screen.

Suppose, for example, the user wants a series of on-line databases searched for a specific topic. The user can either type in or speak what he wishes to be done and then the user watches Sally, the on-screen helper, simulate the job. If at any point during the process the user decides to alter the process, the animation will respond instantly.

After a sequence of events has been defined and the user is satisfied, the Visual Programming Language translates all the commands into code.

The intelligent optical filing system allows users to search through a 1,000-page database of text and pic-

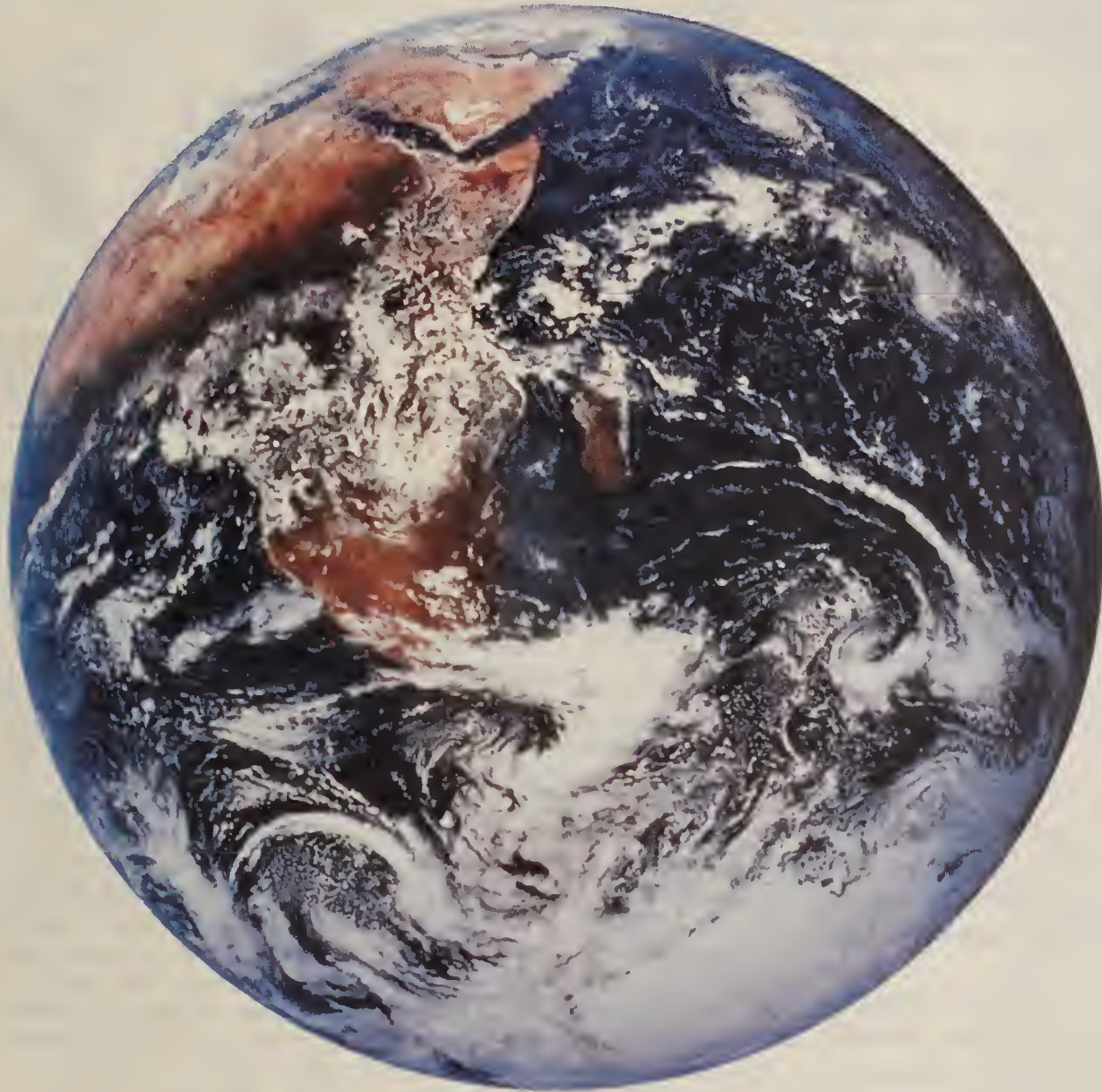
tures. Using expert system techniques, the system will present the user with a list of possible matches to a query. It works somewhat like today's text-management systems.

Also on exhibit were computer-aided software engineering (CASE) tools, which are being used internally at Hitachi but are not yet sold. These include software for systems analysis and something called Problem Analysis Diagram, a picture of the program that replaces flow charts. All the CASE tools' output can be used as input into the other programs.

Other research and development efforts at Hitachi include neural networks and fuzzy logic, an offshoot of artificial intelligence. The company already sells expert systems in Japan, including a machine that translates English into Japanese and vice versa.



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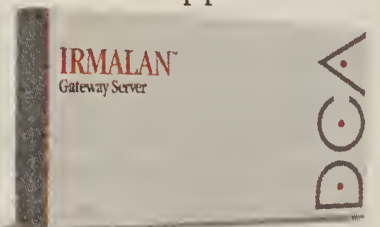
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## EDITORIAL

## Good for you?

**I**N HIS BOOK *Wave of Change*, published a decade ago, Charlie Lecht foresaw a battle of galactic proportions between IBM and AT&T, who Lecht felt would fight it out for supremacy in the future days of networked computing (once AT&T was broken up, which Lecht also foresaw).

Certain pieces of this scenario actually began to fall into place. IBM became more aggressive in the communications area, investing heavily in a satellite venture and buying up a promising private branch exchange vendor named Rolm.

AT&T jumped full-force into the systems arena, striking a major deal and equity investment with Olivetti while pouring untold tens of millions of dollars into the sinkhole of large systems development.

Today, Satellite Business Systems, Rolm and the Olivetti deal are part of a costly and futile history, while the systems sinkhole continues to pull millions away from AT&T's bottom line, and the basic premise of Lecht's book holds true: AT&T feels its future depends on being able to provide totally integrated solutions, leveraged by its fabulous communications network. So it's gunning for NCR.

As of this writing late last week, NCR had decided that AT&T's takeover attempt might not be all that bad if the telephone company could just raise its offer a bit, despite pronouncements earlier in the week that NCR just wasn't for sale to AT&T.

Interestingly, in the many news accounts of this, the biggest buyout in computer industry history, the focus has been on what's good for NCR's shareholders and Chairman Charles Exley and what's good for AT&T and its failed computer strategy and what's good for the fictitious widows and orphans who, it used to be said, own AT&T.

What about the customer? What would make such a megamerger right for them? Is AT&T's long-term survival strategy in harmony with the customers' best interests?

Recent history indicates that big hardware mergers soon falter, stumble and even crash. Consider Rolm/IBM, Burroughs/Sperry, Bull/Honeywell. And when the stride of these big merger partners is broken by poor performance, you'd be hard-pressed to make a case that the customer ultimately benefits. Without question, some shareholders do benefit, at least those who dump their stakes early enough.

Still, it is the customer who both prevails in determining whether the merger works — and suffers if it doesn't. We've heard NCR's senior management clearly state that the merger is not in NCR's interests and, by extension, not in the interests of its customers.

Should AT&T sweeten its offer even higher into the financial stratosphere, these same executives are going to have a very difficult job convincing customers that all of a sudden this marriage makes sense and that it's time to put away the shotgun and take out the rice.



## LETTERS TO THE EDITOR

## LISPing

Regarding the articles by Johanna Ambrosio and Shaku Atre on expert systems and object-oriented programming (OOP) systems [CW, Sept. 17], artificial intelligence has come a long way in the past seven plus years, and I believe that it is poised to provide a foundation for the challenge of the coming decade.

While many of today's AI vendors are writing in C, I believe only LISP can handle the need for expert systems and AI in a true high-volume, high-performance production environment.

The key to an AI product succeeding in the marketplace will be its ability to consistently give high levels of performance under the burden of large volumes of data.

AI systems need to provide a seamless, portable environment that businessmen and data processors can use to quickly develop tools and implement systems.

I will look forward to more articles on AI, expert systems and OOP systems in the future.

Robert S. Dominko  
President  
RSD Associates of  
New Jersey, Inc.  
Annandale, N.J.

prevent a black manager's career advancement simply because the "majority" manager is intimidated or insecure to be highly offensive. I trust that in those cases, the one being discriminated against would bring some type of discrimination suit against his or her employer. However, to suggest that white managers squelch black subordinates' career aspirations due to insecurity and intimidation, without citing actual cases or statistics of occurrence, is alarming. Where did this information come from?

Ms. Wilson's recommendation to blacks to "continue a sense of giving 110% to accomplish the same as their 'majority' counterparts" is intended to encourage blacks to disprove the "majority" misconception that blacks are not as hard-working. What she is saying, in fact, fosters the belief that blacks are not as good as whites; that they are not as smart or as diligent or as competent. How ludicrous! All IS professionals should work hard and be rewarded as a result of their efforts. It is equally wrong to promote on the basis of skin color.

Michael K. Ackerbauer  
Systems Administrator  
CS Technologies, Inc.  
Poughkeepsie, N.Y.

object-oriented databases.

Will IBM be able to make such enhancements? My guess is no. The fact that they have not ruled out the development of a new database management system shows they realize the enhancement approach might not work. Users who move from IMS to DB2 may be in store for yet another conversion in the future.

This may not be a problem for many shops if this newer technology is years away. Many believe, as the article states, that "it will take at least two or three years before object-oriented technology gains widespread use in mainstream information systems shops." This is only true if "mainstream information systems shops" means those using IBM hardware. This advanced technology has been commercially available for a number of years and is now being used to build production systems.

This is not widely known because it is happening outside the IBM hardware environment. Unisys has had a powerful post-relational DBMS for a number of years. But IBM's monopoly of the mainframe market continues to make it difficult for other hardware vendors to get publicity for their products.

Robert Finkle  
Consultant  
Effective Systems, Inc.  
San Francisco, Calif.

## Racial tension

In "IS: A tough road for minorities" [CW, Nov. 19], Ms. Wilson levels a number of accusations at the information systems establishment regarding racial inequality. But to imply that blacks are still discriminated against with little published factual basis within the article borders on the inflammatory.

I find Ms. Wilson's claim that a "majority" manager would

## Beyond relational

Regarding your article on IBM's object-oriented direction [CW, Nov. 5], by announcing that its relational systems will be enhanced to provide object-oriented support, IBM is admitting that relational technology is no longer state-of-the-art. They are acknowledging that users need, and are demanding, the significant advantages of semantic and

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.



# U.S. must seize tech initiative

MICHAEL DUKAKIS



This is a transitional moment for U.S. high technology. Rapid political and technological change hold the promise of great things to come in the 1990s, yet a lot of industry people I talk to these days are as anxious and perplexed as I have ever seen them. Where, they say, do we go from here?

As the people of Massachusetts know, I am an inveterate optimist. We saw what the technology industries were capable of in the 1980s as the computer companies boomed. And the 1980s were only a taste of things to come, as rapid progress in a variety of technologies begins to sow the seeds of new growth in the 1990s. What troubles me is that I don't see any evidence that our country is prepared to lead the technology revolution.

Think back just a few months, when the Berlin Wall came down and communist governments fell all over Europe. Suddenly, the Cold War was over. Democracy had triumphed. The time was at hand to throw off the dead weight of an endless arms race and recommit ourselves to

Dukakis is the governor of Massachusetts and will be leaving office in January.

peacetime investments in technology, education and training — the things we need to restore the U.S.' competitive edge.

Yet just when great opportunity beckons, we find ourselves mired in a morass born of the opportunities squandered in the 1980s. Twelve years after the last great energy crisis, the U.S. is back at the mercy of the oil markets, with no national energy policy. Ten years after massive federal tax cuts — tax cuts that were to revive U.S. productivity and technological leadership through new investment — we are tallying up the massive cost of worthless investments in junk bonds, leveraged buyouts, hostile takeovers and the fraudulent real estate portfolios of the savings and loan industry.

What makes this moment more perilous still is the relentless pace of international competition. Nowhere is this more apparent than in high technology.

The U.S. Commerce Department recently concluded in a study of 12 emerging key technologies that the U.S. is losing badly to Japan in the development of four technologies, losing less badly in six and holding its own in two.

The U.S. is rapidly losing market share in semiconductors, computers, fiber optics and advanced materials. High-tech products such as computer

memory devices, which were staples of U.S. high-tech production just five years ago, have now met the fate that consumer electronics and automobiles met over a decade ago.

We are certainly seeing the effects of the new global high-tech order in Massachusetts. Our companies succeeded brilliantly for years with minicomputers and proprietary systems; now they are competing fiercely in an international market that calls for open systems and ever-smaller computers.

So why am I an optimist?

First, I know from experience that outstanding firms such as Digital Equipment Corp. have faced tough times before and emerged even stronger.

Second, as the more established companies in Massachusetts have become leaner, I have watched a whole new crop of companies come to the fore.

There is nothing wrong with U.S. innovation and invention, either in Massachusetts, Silicon Valley or anywhere else. What we are increasingly poor at is nurturing these companies so

they grow into established firms that fully exploit emerging technologies and spin off the new products and new jobs that the U.S. so desperately needs.

It is long past time for the U.S. to place the same intensive focus on national competitiveness in high technology that we



Robin Jareaux

once placed on the race to the moon and, until recently, on the superpower arms race.

It is time for a shift away from unnecessary defense research with little commercial application to the support of precompetitive technologies, such as biotechnology and microelectronics, where the U.S. can take a

leadership position. It is time for regulators to move decisively toward the creation of high-speed data networks and the "smart" highways of the future, just as the Japanese have. And it is long past time for us to stop the endlessly circular debate over "industrial policy" and use the tools available to the president and his administration to promote U.S. leadership in technology.

Japan is winning the technological race because it provides a protective home market to emerging technologies that not only encompasses joint research and development and favorable interest rates but the education and training of people as well. Japan's investment in people not only makes it a manufacturing powerhouse but also a laboratory for the assimilation of new technologies.

I simply cannot believe that our own budget and trade policies are incapable of providing similar support to new technologies without resorting to endless debate over whether we should have an "industrial policy." After all, it will be pointless for any president to swear off picking "winners and losers" if the U.S. has no technological contenders at the starting line.

## Japanese investors eye U.S. brainpower

GLENN RIFKIN



The headline blared off the front page of a recent *New York Times*: "Japanese Labs in U.S. Luring America's Computer Experts." The lengthy article offered yet another bleak scenario of the U.S. computer industry being bested by the Japanese. It may be the scariest yet.

So just when it seemed Japan-bashing had become passe, like junk bonds and Reaganomics, we get a reminder that the Japanese are relentless (ruthless?) in their pursuit of excellence and that they have pockets deep enough to pay for it. They've bought the companies; they've bought the buildings; they've bought the land. Now they are buying the minds — and some pretty decent ones at that.

According to the article, Japa-

Rifkin is a *Computerworld* features editor.

nese computer makers are quietly setting up research labs across the U.S. and luring some of the best and brightest computer scientists to work in these labs. NEC has already opened a lab in Princeton, N.J., Matsushita and Canon are starting ones next year in San Francisco and Stanford, Calif., respectively. And Mitsubishi is considering a lab in MIT's neighborhood.

The Japanese say that these labs will simply increase the great technology in the world, thus benefiting everyone. And oh, by the way, the Japanese will own the patents to these great ideas.

There are two ways of responding to information like this. One is to indulge in some last-gasp Japan-bashing. The other is to recognize that, while what we're looking at is a very real and serious situation, it is also one mostly of our own creation and one that we can take steps to reverse.

Though university computer science departments are filled with promising students and gift-

ed faculty, the kind of researcher who can make quantum changes in the field is a valuable commodity. Despite that fact, these geniuses are often working for five-figure (or low six-figure) salaries with little hope of a major payoff unless they become entrepreneurs and start successful computer companies.

Since few researchers have any interest in doing that, it shouldn't come as any surprise that, when the Japanese come in and offer salaries reportedly in the area of \$250,000 for senior researchers, more than a few are going for it.

### More than money

Money isn't the only motivator, either. Everyone agrees that the best minds in computer science are here in the U.S., on campus, in private research labs and in industry. Everyone also agrees that though these minds often come up with the breakthrough ideas, the expected products don't always result.

Unlike the Japanese, who are famous for taking concepts and turning them into best-selling products, U.S. companies have often stumbled on manufacturing and marketing issues.

Simply put, computer scientists have to like what the Japanese can bring to the lab. No

more constant worry about grants and financing research. No more working with second-rate equipment. No more waiting in vain for an idea to turn into a product.

Right about now, you have to ask the obvious question: Why don't U.S. companies and universities offer these incentives themselves? The answer isn't so clear.

It would be inaccurate to say that no U.S. companies or research labs offer sterling environments for their computer scientists. But they generally offer parts of the package. If they have state-of-the-art equipment, then the salaries are not high enough. If the salaries are good, the product development is slow.

Most of all, there hasn't been widespread acknowledgment of just how valuable these folks are. And the patriotism argument doesn't hold water just for that reason. In a free global marketplace, these scientists are within their ethical rights to sell themselves to the highest bidder.

I'd be willing to bet that U.S. firms wouldn't have to match offer sheets anyway.

If we could provide salaries that were more in line with their true value and better follow-through on good ideas, it would be a lot easier for our computer

scientists to look at the Japanese offers and just say no. Loyalty arguments would be easier to swallow in a world-class environment.

Of course, before you computer science types start your *Katakana* lessons, keep an important point in mind. It's not all roses working for a Japanese boss. The perks may be great, but the cultural barriers can be enormously high between here and Tokyo. Talk to software developers, for example, who have tried to work for Japanese companies here in the U.S. and ended up frustrated and disillusioned over a laundry list of unsolvable problems. More than a few of the Americans will be cleaning their desks and returning to the fold once the relationship turns sour.

With that said, this scenario is a serious one. The U.S.' global position in the computer wars is already showing signs of strain, and the economic slowdown is sending thousands of computer industry people out with resumes. It is a perfect time for someone with the right credentials to listen to a fantastic offer, no matter where it originates from. If we are to maintain a leading role in the future of computer science, some answers must be found to address the latest Japanese buying spree.





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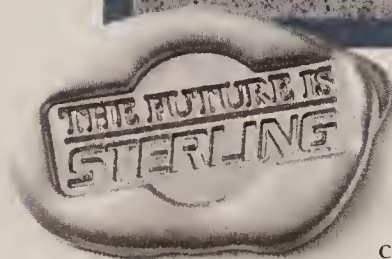
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# SYSTEMS & SOFTWARE

## COMMENTARY

Rosemary Hamilton

### Discounts for big spenders



On the surface, IBM's revenue-based discounting contracts look pretty good for users. A closer look

shows some good points and a potential downside as well.

First of all, revenue-based discounting in simple terms is a method of determining discounts based on a total dollar amount a customer commits to for a given contract period. In many cases, this would replace an approach that established discounts based on specific products — an approach that could penalize customers if they didn't meet those commitments.

Now the good side. The chief benefit of a revenue-based plan appears to be flexibility. With this type of contract, a customer can juggle requirements during a given contract period as needed. These days, that can be a very big deal.

As an example, a customer could commit to three smaller-size processors for his two data centers for the next 24-month period. Toward the end of next year, the customer's company may determine that the information systems department must consolidate its operations into one data center to cut back on costs. This customer could adjust acquisition plans to fit the one data center. Perhaps the customer could upgrade an existing processor and purchase a larger one instead of two new ones. If the combination of one large processor and an upgrade

*Continued on page 38*

## DEC exec clarifies Unix strategy

*Ultrix defined as major Unix platform, but special products still count*

BY JOHANNA AMBROSIO  
CW STAFF

NASHUA, N.H. — Although Digital Equipment Corp. supports three different flavors of Unix — with another on the way — the company does indeed have a cohesive Unix plan, according to a DEC manager.

"We have one major Unix platform — that's Ultrix — and lots of specialized products," said Glenn Johnson, corporate software engineering manager for the open software program. He said DEC will continue to sell AT&T System V and The Santa Cruz Operation (SCO) versions of Unix, which are geared to specific market niches, even as the company is blending its Ultrix with OSF/1, the Open Software Foundation's operating system.

DEC is selling AT&T Unix System V into the telecommunications market because "that's what those customers demand," Johnson said. And SCO Unix is intended for DEC's so-called Ap-

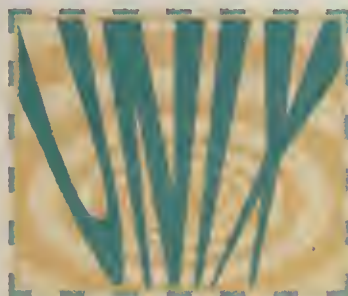
plication computers, which are based on Intel Corp. chips and intended for small to medium-size businesses.

The company went with SCO Unix, Johnson said, because of the small-business applications available under that operating system. "SCO is part of our general systems strategy, not part of our Unix strategy," he said.

However, if the Intel architecture proves popular with DEC's existing Ultrix base, "we might port Ultrix to that platform," Johnson added. This version of Ultrix would not have binary compatibility with DEC's high-end Ultrix, however.

The blending of Ultrix to the OSF/1 kernel will take place "late next year," he said. He promised the transition will be painless for most customers,

with most just having to recompile their current applications to take advantage of the new kernel. But he acknowledged that "some" applications may have to be rewritten to fully comply with what DEC is calling Ultrix 5.0.



"We're committing to a high degree of applications portability" between the existing versions of Ultrix and Ultrix 5.0, he said.

Still, DEC's strategy has left some observers wondering. "It's confusing, and I expect it to get more so," said Rikki Kirzner, senior industry analyst at Dataquest, Inc. in San Jose, Calif. "They've bitten off a mouthful to be able to sell and support all those versions."

DEC's motivation is money, Kirzner added. "It appears they don't want to walk away from any segment of the market, and I'm not sure they're in a financial

position to do so," she said.

Another analyst concurred. "I think [DEC] is hedging its bets," said Chuck Barney, director of competitive analysis at Workgroup Technologies in Hampton, N.H. "They're trying to be all things to all people."

However, Roy Schulte, program director of Stamford, Conn.-based Gartner Group, Inc.'s software management strategies group said, "If [DEC] were inventing a brand-new strategy for the '90s, this would not be the one they would have chosen. But they arrived at it over time, kind of an accident of history, and in that context, it makes sense."

There are, however, some weak points, Schulte said. "[DEC] is not as competitive in the commercial Unix marketplace as some others are." Most notably missing is a transaction processing monitor to run under Ultrix, he said.

"Although some of the others aren't yet shipping their products, they've at least announced them. And unless DEC does something very soon, they might be behind. They're going to have to work very hard to catch up," Schulte said.

## Information users opening up to Unix-based PI Plus

BY SALLY CUSACK  
CW STAFF

NATICK, Mass. — When Prime Computer, Inc. released PI Plus, the Unix version of its Pick-based Information database product in August, its 3,500 loyal Information users accepted the news with cautious enthusiasm.

Now, four months later, with a definitive delivery schedule for the next version of PI Plus and a road map from Prime headquarters outlining Prime's database

evolution, customers are more confident that Prime will be able to produce a fully functioning rendition of Information on a Unix platform — when and if they choose to migrate to an open systems environment.

"For most commercial and university users, the mandate is to move to open systems," said Lee J. Leitner, editor and publisher of *Infocus*, a bimonthly magazine for Prime Information users. Leitner added that the move to open platforms is not

propelled by technical reasons but results from management's desire to break away from proprietary vendors.

### Gains missing parts

Stephen W. Machnik, vice president of the new Prime Information Business Unit, said Prime will deliver a multinational version of PI Plus in June. It will include many functions users missed in Release 1.0. Among the enhancements will be increased networking capabilities for Prime 50 series platforms, file extension systems and Fortran support for the software's General Calling Interface.

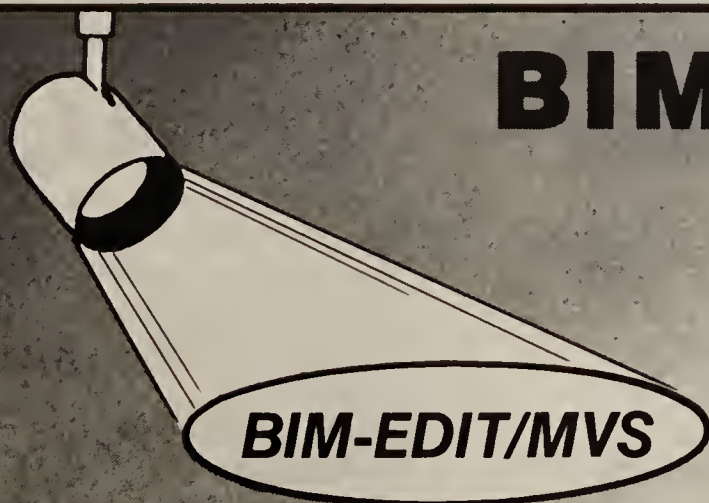
"When we shipped the first release last summer, 95% of the

product was complete in terms of customer requirements," Machnik said, referring to PI Plus' ability to mirror Information in a Unix environment. "The next release will provide the remaining 5%."

Jeff Beller, vice president of research and development at Stauffer Information Systems, an Oxnard, Calif.-based software development firm, is very pleased with the PI Plus product.

"It's quite straightforward," Beller said. "We have a [fourth-generation language] program, Blacksmith, originally written for the Prime Information environment. It has 80 or 90 files and more than a thousand programs,

*Continued on page 38*



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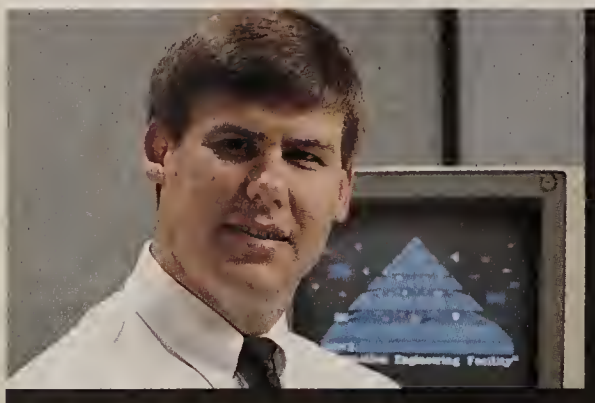


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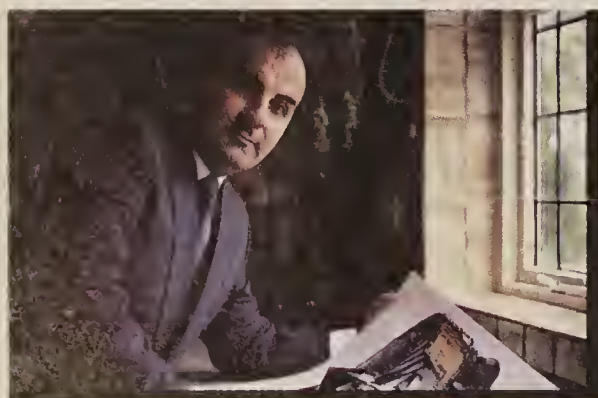
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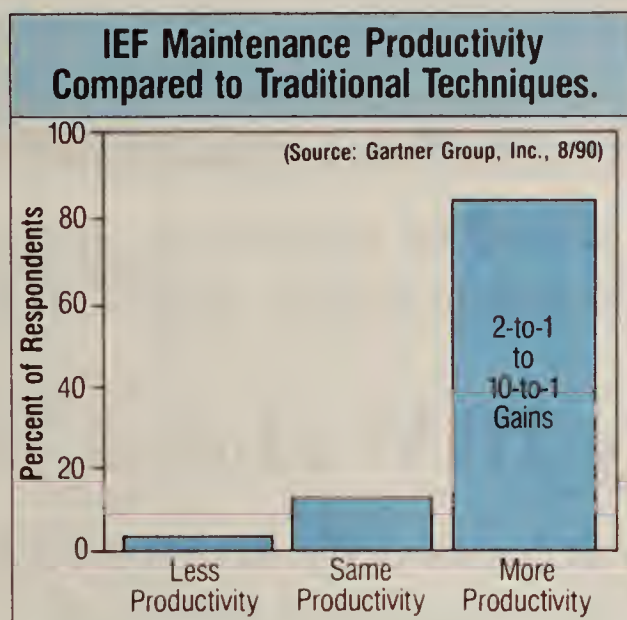
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Developers were asked to compare IEF maintenance to former methods. Of those responding, more than 80% reported productivity gains of from 2-to-1 to 10-to-1.

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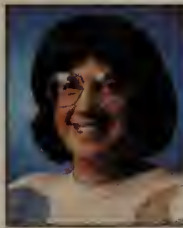
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## COMMENTARY

Jean S. Bozman

## Break out of your shell



Tandem Computers has a new software strategy: Break out of the protective shell of the proprietary Guardian operating system, and get more business partners to break into the world of open systems applications.

That policy was underlined by last week's announcement of the new Tandem Applications Group (TAG). The group, an extension of the 6-year-old Alliance program, will involve outside software suppliers in the task of readying a new generation of open systems applications for Tandem computers. It is, in short, an attempt to reduce development time for a wide range of applications that will run against databases stored on Tandem systems.

TAG is intended to allow Tandem to establish long-range plans with dozens of outside software vendors. That process has already begun, however. A newfound relationship with Oracle Systems will allow end users to query Tandem's Nonstop relational database as they would query an Oracle database on a Unix computer. In time, Oracle's computer-aided software engineering (CASE) tools will be ported to run on a Tandem host.

Another relationship with Information Builders will allow Information Builders' Focus users to combine data from the Tandem Nonstop database with data from Unix and IBM systems.

Wait a minute! Wasn't Tandem known for its proprietary Guardian operating system and the type of high-speed transaction-processing used in banking networks? Why would Tandem want to branch out from its relatively stable niche — one that brought it nearly \$1.9 billion in sales last year?

The answer is that Tandem, like other systems vendors, has seen the handwriting on the wall. Users are tired of revamping their entire IS architectures every time a new machine or system comes on-line. Open systems, in all the shades of meaning that phrase is beginning to assume, are "in." Proprietary systems are merely running in place.

To increase its revenue, Tandem must simply step into a broader arena, such as the robust Unix marketplace in Europe

Continued on page 38

## Litel expands into VAX 9000

## ON SITE

BY MARYFRAN JOHNSON  
CW STAFF

WORTHINGTON, Ohio — Seven years ago, a donated mid-range computer with a Digital Equipment Corp. label set Litel Telecommunications Corp. on the path to becoming one of DEC's first mainframe customers.

This rapidly growing telecommunications firm, which started off with a PDP 11/750 given to company founder Lawrence McLernon, is a regional competitor of AT&T, MCI Communications Corp. and U.S. Sprint Communications Co. The privately held Litel owns and operates a fiber-optic-based network that reaches from Pennsylvania across Ohio and Michigan and south into Illinois and Indiana.

"Sometimes I wonder what fate would have been if Larry McLernon had been offered a small IBM midrange instead," said Michael Guider, vice president of network and information services at Litel. "But

DEC has demonstrated its capability to help Litel grow from \$2 million in revenue in 1985 to \$250 million to \$300 million this year."

Yet, Guider minces no words about how much Litel expects from its primary vendor — particularly now that a mainframe VAX 9210 is running a new, large-scale transaction processing application for billing and order processing.

"The service level for a main-

frame is very different, because the impact of an outage is much larger," Guider noted. "An ability to grow the system while it stays in service is critical for us. Also, DEC must deal now with asset protection from a customer point of view."

He is one DEC customer convinced that the mainframe line will help save the Maynard, Mass.-based company from the industry blight on minicomputer vendors.

"If DEC didn't produce a mainframe-class system, I am sure that they would have gone out of business," Guider maintained. "It would have forced all those large customers like us to IBM at a certain point."

Litel began gearing up for its mainframe environment three years ago by hiring information systems professionals grounded in the IBM environment, not in DEC equipment.

"We built our technical and management staff on people with a large-scale MVS-based environment as background. We could not find VMS people with that experience," Guider explained.

As one of a dozen IS directors on DEC's VAX 9000 customer advisory board, Guider is a polite but vocal critic of DEC's mainframe software pricing, which DEC officials are now reconsidering. "DEC cannot just decrease hardware costs and increase software costs with price/performance and cost of ownership staying the same," he stressed. "They need to widen the [price] gap with IBM, not close it."



Litel's Guider has high expectations of company's primary vendor DEC



was off by an unacceptable margin," he said.

Once the mainframe was online, Litel was able to begin field testing its major "new-generation" application: an order processing and billing system built on Computer Associates International, Inc.'s CA-DB database for VAXs, a product previously sold as Enterprise DB by now-defunct Cullinet Software, Inc.

The order processing segment is in production now, and the billing system is in beta test. Both will run on the VAX 9210 and on several VAX 6000 Model 440s, with a second mainframe, a VAX 9410, joining them this month.

"We have more than 4,600 programs running on the VAXs, and the order processing application alone has 600 programs in it," Guider noted.

The new application is intended to enable Litel to reduce its time-to-market for new products from two to six months to "days and weeks," Guider said. Litel plans to bring out additional new products and services yearly with its new mainframe processing capability, he added.

Two months ago, Guider merged two Vaxclusters in the data center, using the VAX 9210 and a VAX 6000 Model 410 as connection points for a cluster that now includes four 8000-class processors, five 6000 models and a string of hierarchical

## Parcplace updates Smalltalk

BY JEAN S. BOZMAN  
CW STAFF

MOUNTAIN VIEW, Calif. — Parcplace Systems, a supplier of object-oriented languages, recently issued new releases of its Objectworks/Smalltalk and Objectworks/C++ products.

The enhanced packages, both priced at \$3,500, are designed to ease portability among various hardware systems and offer more user-friendly features, according to the company.

Objectworks/Smalltalk, used by many software firms to develop object-oriented code, now supports color for the first time, according to Catherine J. Tucker, Smalltalk product manager. Other new Smalltalk features include defaults for standard windowing systems, automated "garbage collection" of discarded objects and support for international languages.

The new version of the company's 1-year-old Objectworks/C++ supports tighter integration with standard Unix development tools and support for AT&T's C++ Language System, Release 2.1. Parcplace has decided to market new C++-class libraries, or definitions of object types, in a separate package called Objectkit/C++.

storage controllers.

Litel's own network of 750 terminals, including about 30 workstations from DEC and Sun Microsystems, Inc. and 175 personal computers, links the corporate headquarters with departmental local-area networks in Cleveland and Detroit.

## Teamnet integrates NFS

BY CAROL HILDEBRAND  
CW STAFF

SANTA CLARA, Calif. — Teamone Systems, Inc. raised the curtain on Teamnet 2.0, development software that supports the fledgling concurrent engineering market.

The Unix-based product, which runs on Sun Microsystems, Inc. workstations and can be accessed from non-Sun platforms, is an upgrade from the existing Teamone and includes several new features, one of which is integration with Sun's Network File System (NFS).

NFS enables users on an NFS-compatible system within a network to access design files transparently, as well as manage design changes more effectively.

"Teamnet makes sure that all the right components from various groups are assembled correctly, a procedure that had previously been done through individual tools," Teamone spokesman Kirk Norlin said.

Teamnet also includes a point-and-click interface based on the X Window System and Open Software Foundation Motif standards as well as data compression techniques that minimize the amount of disk space used during the course of a design cycle.

Teamnet 2.0 pricing depends on the installation and costs from \$100,000 to \$175,000 for 50 to 100 users, including maintenance and training. Teamone system users can upgrade to Teamnet free of charge.

## Sybase's Open Tools offers choice of vendor support

BY JEAN S. BOZMAN  
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. recently moved to provide large customers with one-stop shopping for its own products and applications development tools that are sold by Unify Corp. in Sacramento, Calif., and Uniface Corp. based in Alameda, Calif.

Sybase's new Open Tools program, which Unify and Uniface have joined, is an extension of Sybase's existing Synergy program, which includes 100 software vendors, according to Richard Yanowitch, director of market development at Sybase.

Users can buy products from Sybase, Uniface, Unify or any combination of the three and specify which vendor is to give them technical support. Sybase is also willing to provide customer support for all Open Tools products, as well as for its own SQL Toolset fourth-generation language.

"In a number of large accounts, we have found that users have a strong preference for third-party tools that they already know," Yanowitch said.

For its part, Uniface expects to strengthen its two-year relationship with Sybase, Anu Shukla, Uniface's vice president of marketing said.



# Storage system to benefit Ontario government

## ON SITE

BY TIM GRANTHAM  
SPECIAL TO CW

Canadians in the province of Ontario will soon be able to get certified copies of birth, death and marriage registrations in minutes, because the Office of the Registrar General is automating its vital statistics systems with imaging technology.

Over the next couple of months, the Office of the Registrar General, the branch in the provincial Ministry of Consumer and Commercial Relations (MCCR) charged with tracking vital statistics, will

convert more than 10 million documents for storage onto optical discs.

When the ministry moves its headquarters from Toronto to Thunder Bay in 1991, the Office of the Registrar will begin the ongoing capture of the half-million pages of new registrations it receives each year.

The current procedure to obtain certificates requires several days, according to Allen Zimmerman, manager for technology innovation at the information technology planning branch of the ministry. "When a request for a certified copy is made by mail or form, it's entered into our mainframe, and an overnight match is

done against the database of registrations. If a match is found, a pick sheet is produced so that staff can go through the file room and pull the document and make the actual copy. If no match is found, that's another day gone by," he said.

The new system is expected to provide same-day fulfillment of the half-million requests for certified copies that the office receives yearly.

According to Ron Binsell, director of the information technology planning branch, the \$6 million imaging system will not only improve service; it will reduce staff costs by 15% and storage costs by 8,000 sq ft, for combined savings of \$1

million annually.

The MCCR's imaging system will use the Advanced Imaging Management System (AIMS) supplied by Hewlett-Packard (Canada) Ltd., with custom application development by Andersen Consulting. According to Binsell, the ministry chose the HP/Andersen Consulting joint offering because it satisfied all the ministry's requirements at the lowest price while using demonstrable products. He also cited Andersen's imaging application development experience and HP's ability to integrate the imaging system with the ministry's current technology.

The AIMS configuration as implemented at the MCCR conversion site consists of HP Vectra personal computers acting as either capture or retrieval stations connected to an HP 9000 Model 375 minicomputer on a Starlan local-area network. Each PC has either a scanner or laser printer attached and runs Microsoft Corp. Windows-based conversion and image management software designed by Andersen Consulting.

An operator at a capture station uses the PC to scan a batch of registration pages. The conversion software assigns the registration number to each image; this number acts as the key to the image in the database. It then transmits the compressed image to the Unix-based minicomputer, which stores it on a write-once read-many optical disc. The discs are mounted in a Cygnet optical jukebox.

### Long-distance retrieval

Document retrieval staff members in Toronto will be able to access the image database 1,200 miles away in Thunder Bay from their workstations when they wish to make a certified copy.

Each retrieval operator's workstation will use a Windows 3270 terminal emulator to obtain the registration number on the ministry's mainframe via an IBM Systems Network Architecture gateway on the LAN. "Then," said Rob Kloustin, project manager at Andersen Consulting, "the application will pull the registration number off the 3270 window using Windows' Dynamic Data Exchange capability and go out to the imaging server and pull the registration image for that key."

Once the operator has verified the image on the two-page display, he will send it to a laser printer to produce the certified copy. If an amendment has been made since the original form was scanned, such as a name change, this will also be converted to an image and combined with the original during printing.

The provincial Vital Statistics Act previously required that a certified copy be made from an original registration. The act was amended in April to permit the use of images. "We could have used microform and copies from microform [for the project], but we wanted the potential for access at other sites in the future," Zimmerman said.

Andersen Consulting designed the front-end PC software using the Plexus Application Designer provided with HP's AIMS environment. According to Kloustin, Application Designer allowed his programmers to paint dialog boxes and create forms for the Windows interface using a fourth-generation language. "There are very few packages that support the [graphical user interface] on the front end and also support a relational database on the back end," he said.

*Grantham is a free-lance writer based in Toronto.*

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## PI Plus

CONTINUED FROM PAGE 29

and we were able to port over in about four days." Beller said the firm has several applications, such as internal general ledger and accounting programs, that were ported to PI Plus in a few hours.

PI Plus is binary- and source-code-compatible with Information on the Primos 50 series, and, according to Prime, 90% of an existing Information system can be transferred without recompilation.

"We could have made the PI Plus box really scream, but we pay a performance price of about 5% for maintaining our binary compatibility with the Primos 50 series," said Andrew Ridgers, director of

engineering at the Information Business Unit.

There are currently 6,000 Information licenses worldwide.

Introduced in 1978, Prime Information's Pick-based database management system allows users to access more than 4,000 commercial applications written for Pick or Pick-compatible programs.

With PI Plus, Prime hopes eventually to port all Information customers onto the Unix platform, preferably on Prime's recently announced EXL series of Unix-based systems and servers.

Industry watchers said the Unix version of the database software could drive EXL sales. PI Plus is priced from \$1,400 in a four-user configuration to \$120,000 for 500 or more users.

## Hamilton

CONTINUED FROM PAGE 29

matches the dollar value of three smaller systems, the customer would retain his discount.

Of course, that's a simplistic example. Most customers have far more products and concerns to juggle. But that's the beauty of a revenue-based plan. Where it gets really interesting is with the so-called enterprise agreement. According to some IS managers, IBM is offering a deal that would span all corporate purchases. (For the record, IBM has said these deals do not officially exist.)

However, according to at least three IS executives, the enterprisewide agree-

ments are very real. If a customer had such a deal and was faced with a major IS change — be it consolidation or a move to more distributed computing — that customer could shift all kinds of products to accommodate the change.

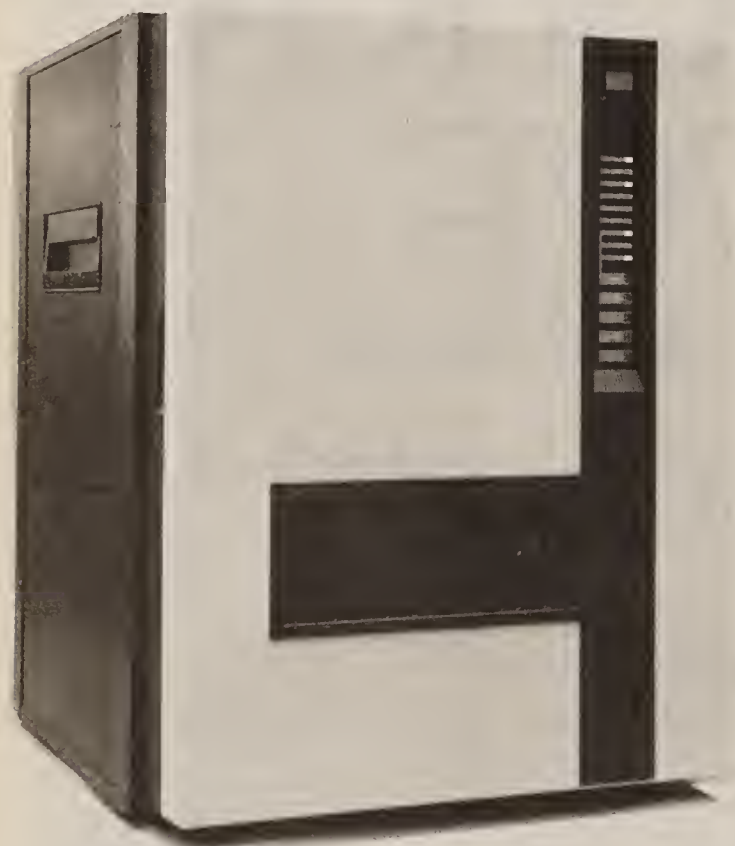
In addition to flexibility, IS managers contacted recently said they see the revenue-based plans as a way of making contract negotiations easier. In a way, this is like IBM's Serviceplan concept for maintenance and service. Serviceplan was intended to reduce the amount of time a customer had to devote to paperwork by creating a master contract to cover all services instead of individual contracts for various aspects of IS.

This, however, leads to the potential downside of revenue-based plans. It seems to me that there could be a hidden price to pay for this notion of easy and flexible contracts, particularly those revenue-based deals that cover corporate purchases. Customers could be locking themselves into IBM across-the-board purchases and cutting off their options from the competition.

They could run the risk of losing better deals and, in some cases, superior products from IBM competitors.

The solution, then, is for customers to weigh these IBM plans carefully against a competitor's offering. This, of course, means that a lot of the work that goes into purchase plans will not be reduced after all.

Hamilton is a *Computerworld* senior editor, systems and software.



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## Bozman

CONTINUED FROM PAGE 33

and Asia — and venture even further into the world of IBM systems. To do this, Tandem has become a latter-day advocate of CASE technology, in which applications are designed before they are ported to specific hardware platforms.

That doesn't mean Tandem is abandoning the Guardian operating system. It's just that Guardian will remain "behind the scenes," running transactions out of the end user's sight. Meanwhile, users will continue to gravitate away from mainframe terminals and toward DOS, OS/2, Apple Computer, Inc. Macintosh and Unix desktop computers. And new applications will be placed on Unix file servers and PC networks.

On-line transaction processing "is still our foundation," said Tim McSweeney, a senior product manager in Tandem's application development tools group. "Critical business applications will continue to require high throughput, fast response times and high-speed updates to the database," he said. "But in the future, users with no specific knowledge about Tandem should be able to query Tandem systems from their own open systems machines."

Of course, the open systems trend transcends Tandem. Hewlett-Packard has already taken the open systems route, and now it looks like DEC will follow. In the 1990s, it's somewhat comforting to know that newfound open systems applications will still be anchored to the mainframes that hold most of corporate America's data.

Bozman is *Computerworld's* West Coast senior editor.



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## NEW PRODUCTS — SOFTWARE

## System software

Legent Corp. has announced Release 1.0 of Automate/VM, an automated operations software product designed for IBM's VM operating environment.

The product automatically responds to system events or changes in resource status. If a problem occurs, it also reports on conditions that cannot be resolved immediately, according to the vendor.

Automate/VM runs on VM/SP, VM/HPO Release 4.0 or higher, VM/XA SP2 and VM/ESA. Pricing starts at \$7,500.

**Legent**  
2 Allegheny Center  
Pittsburgh, Pa. 15212  
(412) 323-2600

The Adesse Corp. has announced Release 1.0 of VM/Xaid, a product developed to enable IBM VM/XA-based systems to execute a program that runs correctly in 370 mode but fails when running in XA-mode-based virtual machines.

The product extends IBM Control Program set commands, thereby enabling users to turn System/370 emulation on and off, the vendor said.

Initial licenses range from a onetime

charge of \$9,600 to a \$4,400 annual charge.

**The Adesse Corp.**  
36 Mill Plain Road  
Danbury, Conn. 06811  
(203) 790-9473

## Development tools

The Dylakor Division of Sterling Software has introduced Dyl-Online CICS Release 2.5, an interactive menu-driven program development system designed to assist users in executing Dyl-280 II programs in CICS environments.

The product automates product development tasks and enables users to view job outputs by pressing a single key, the

vendor said. It includes rewritten command-level code that complies with requirements for the CICS version for Enterprise System Architecture.

Pricing ranges from \$8,000 to \$16,500, depending on type of operating system and CPU size.

**Sterling Software**  
Dylakor Division  
9340 Owensmouth Ave.  
Chatsworth, Calif. 91313  
(818) 718-8877

Sunrise Software International, Inc. has announced a Digital Equipment Corp. VAX/VMS version of Ezx, a development tool for Open Software Foundation Motif graphical user interface applications.

The product is priced at \$3,500 for a single-user version.

**Sunrise Software International**  
1151 Aquidneck Ave.  
Middletown, R.I. 02840  
(401) 847-7868

## NEW PRODUCTS — HARDWARE

## Data storage

Optical Laser Systems, Inc. has introduced a laser filing and retrieving archival system that uses write-once read-many optical drives.

The OLSI Smartfile is an integrated stand-alone system that facilitates random data retrieval and includes a patent-protected software package.

It is priced at approximately \$25,000.

**Optical Laser Systems**  
8640 Phillips Highway  
Jacksonville, Fla. 32256  
(904) 739-3500

Decision Data Computer Corp. has announced a direct-access storage device that can be connected to IBM Application System/400 Models B30 through B70.

The 9432 disk array comprises three pairs of 300M-byte, 3½-in. disks and features a disk rotation speed of 4,318 rpm, thereby reducing average latency to 6.95 seconds, the vendor said.

Pricing for the product ranges between \$14,200 and \$30,600, depending on configuration.

**Decision Data Computer**  
1 Progress Ave.  
Horsham, Pa. 19044  
(215) 956-6700

## I/O devices

Idea Courier has introduced an upgradable family of paper white IBM 3270 and Application System/400 displays.

The Idea 12000 series of black-and-white displays complies with the Swedish agency Semko's MPR-P 1987:2 standard for electrostatic and electromagnetic emissions, the vendor said. The displays can be configured as mainframe or mid-range units by inserting coaxial- or twin-axial-compatible plug-in logic modules.

Pricing ranges from \$1,395 to \$1,595, depending on type of mainframe or mid-range models purchased.

**Idea Courier**  
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## DB2 On Your PC.

XDB's SQL engine supports all mainframe DB2 SQL syntax, imports and exports DB2 data and

schema, and works with both ASCII and EBCDIC. Its mainframe power includes dynamic SQL, domain and referential integrity, updatable views, transaction management, backup/recovery, security, data dictionary, and automatic record and table locking. And yes, it will do all of this on your PC under DOS, OS/2, or Windows 3.0.

In fact, the XDB SQL engine is so compact that it runs on any PC in under 300K, leaving plenty of room for your application.

And you can access mainframe DB2 data with the XDB-Link gateway.

## COBOL And C With SQL

XDB lets you write programs with embedded SQL in COBOL or C. The XDB-

Workbench integrates seamlessly with the Micro Focus COBOL/2 Workbench enabling you to take full advantage of a rich programming environment.

## Rapid Application Development.

XDB provides tools to further increase your productivity.

Our visual Report Writer makes report development intuitive and our Forms Generator lets you paint sophisticated data entry and transaction screens.

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In review after review, XDB products consistently receive the highest ratings. *PC Magazine* named XDB an "Editor's Choice." *Software Digest* ranked XDB first among advanced SQL products. And *PC Week* ranked XDB tools first among Client/Server database systems.

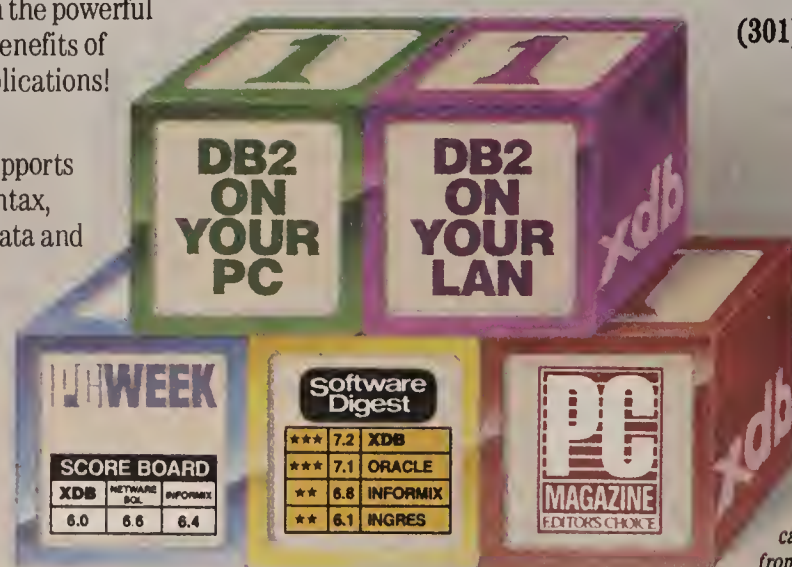
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# PCs & WORKSTATIONS

## COMMENTARY

Patricia Keefe

### Users come first, right?



Last month at Comdex/Fall '90, Michael Maples, vice president of applications at Microsoft, warned the user community that it "must keep up with the new technologies, or they're going to be left behind."

Oh really? Who determines the difference between a user falling "behind" and a product ahead of its time?

I mean, doesn't Maples have this backwards? It seems to me that the dictum should read: Vendors who are not responsive to user needs will watch black ink fade to red right before their eyes.

It sounds like what he was saying was, "Buy into our product strategy right now, or we'll wash our hands of you." Because after all, the vendor knows what's best for the user, right? Too often that involves buying more products. A user of Wang equipment once grumbled to me that his account rep's idea of fixing his problems was to throw more products at him. This went over like a lead balloon.

Telling users "buy or else" is an interesting marketing concept considering we stand on the precipice of a recession. But

*Continued on page 48*

## SPA offers free (audit) software

BY MICHAEL FITZGERALD  
CW STAFF

If you knew that the Software Publishers Association (SPA) had a free kit to help you keep your personal computers immune to illegally copied software, would you call its toll-free number to request the kit, even if you were sure that your PCs were clean?

"You get a little scared calling people like that," admitted Tom Peltier, an information security specialist at General Motors Corp. in Detroit. "You have that foreboding that they're going to be checking into you."

However, Peltier said that

just the opposite occurred after his phone call and request for an audit kit. He has since decided that snooping "is not [the SPA's] role in life — they want to make sure that people clean up their acts if they need to, and that's all they're about. Working with them, we've come up with a very strong program for General Motors."

Ironically, GM, or any other company, can make as many copies of Spaudit, the SPA's auditing software, as it wants, as long as the program is only used internally.

GM did its first internal audit in 1985, using Peter Norton Computing, Inc.'s Norton Utilities package, and started to de-



velop a software copying policy in February 1988, before the SPA developed its audit program, released in May.

GM has developed four 20-minute movies, with the help of Boston-based Commonwealth Films, Inc., that it shows to its 780,000 employees worldwide to help drive home the importance of data security in general. GM, through its subsidiary, Electronic Data Systems Corp., also has an extensive series of internal publications on data security and proper use of software, and an anticopying provision is written into the company's code of ethics.

The company began a wholesale audit of its PCs last week, starting at corporate headquarters, Peltier said. He said Spaudit will save the company extensive amounts of time.

SRI International, a nonprofit research group based in Menlo Park, Calif., was so pleased with Spaudit that it decided to develop a version of the program for Apple Computer, Inc.'s Macintosh. This version is now being beta-tested at SRI and will be distributed by the SPA as soon as it is ready for delivery.

Prior to getting Spaudit, SRI used Xtree Co.'s Xtree and painstakingly wrote out the list of software programs by hand. Larry Shoemaker, senior internal auditor at SRI, said that Spaudit "has cut down drastically the amount of time required to do an examination of a hard disk. We used to need one or two hours for a machine, but now it takes about five minutes."

Shoemaker reported that SRI

has done 22 audits this year, covering some 2,000 machines.

Shoemaker said housekeeping seems to be the major issue SRI has to face. A user might get a new machine, and the old machine will be given to a different user, with all its original software still intact on the hard disk. Shoemaker pointed out that this is technically a violation of the law, even if the user is unaware that the illegal copies exist on the machine.

### In the kit

**S**paudit, the SPA's auditing kit, comes with the following:

- A list of suggested procedures for a corporate self-audit.

- Sample memoranda for management to distribute on what constitutes illegal copying of software programs.

- Two brochures: "Software Use and the Law" and "Is It Okay To Copy My Colleague's Software?"

- Spaudit, a licensed software application on 3½- and 5¼-in. floppy disks.

The number for the SPA is (202) 452-1600. Orders can also be mailed to SPA Audit Materials, Suite 901, 1101 Connecticut Ave., N.W., Washington, D.C. 20036. The kit is free of charge.

MICHAEL FITZGERALD

## Ventura adds Mac Publisher

BY JAMES DALY  
CW STAFF

SAN DIEGO — One of the most popular DOS-based publishing packages came to Apple Computer, Inc.'s Macintosh line recently when Ventura Software, Inc. announced that it has begun shipment of Ventura Publisher, Macintosh Edition.

The application is functionally similar to the Ventura Publisher package available for the DOS, OS/2 and Microsoft Corp. Windows 3.0 environments but adds several features including movable dialogue boxes, a spelling checker, revised menus and doc-

umentation as well as additional text and graphics import and export filters.

Additionally, all versions of Ventura Publisher are designed to be compatible across platforms, enabling users to share documents between IBM personal computer-compatible and Macintoshes.

Officials at Ventura, a Xerox Corp. firm, said the Macintosh version of Ventura Publisher has a suggested list price of \$795.

In 1991, Ventura Publisher is also expected to be offered for the Unix operating system running under Sun Microsystems, Inc.'s and AT&T's Open Look.

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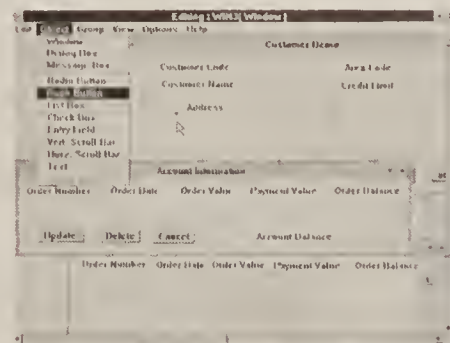
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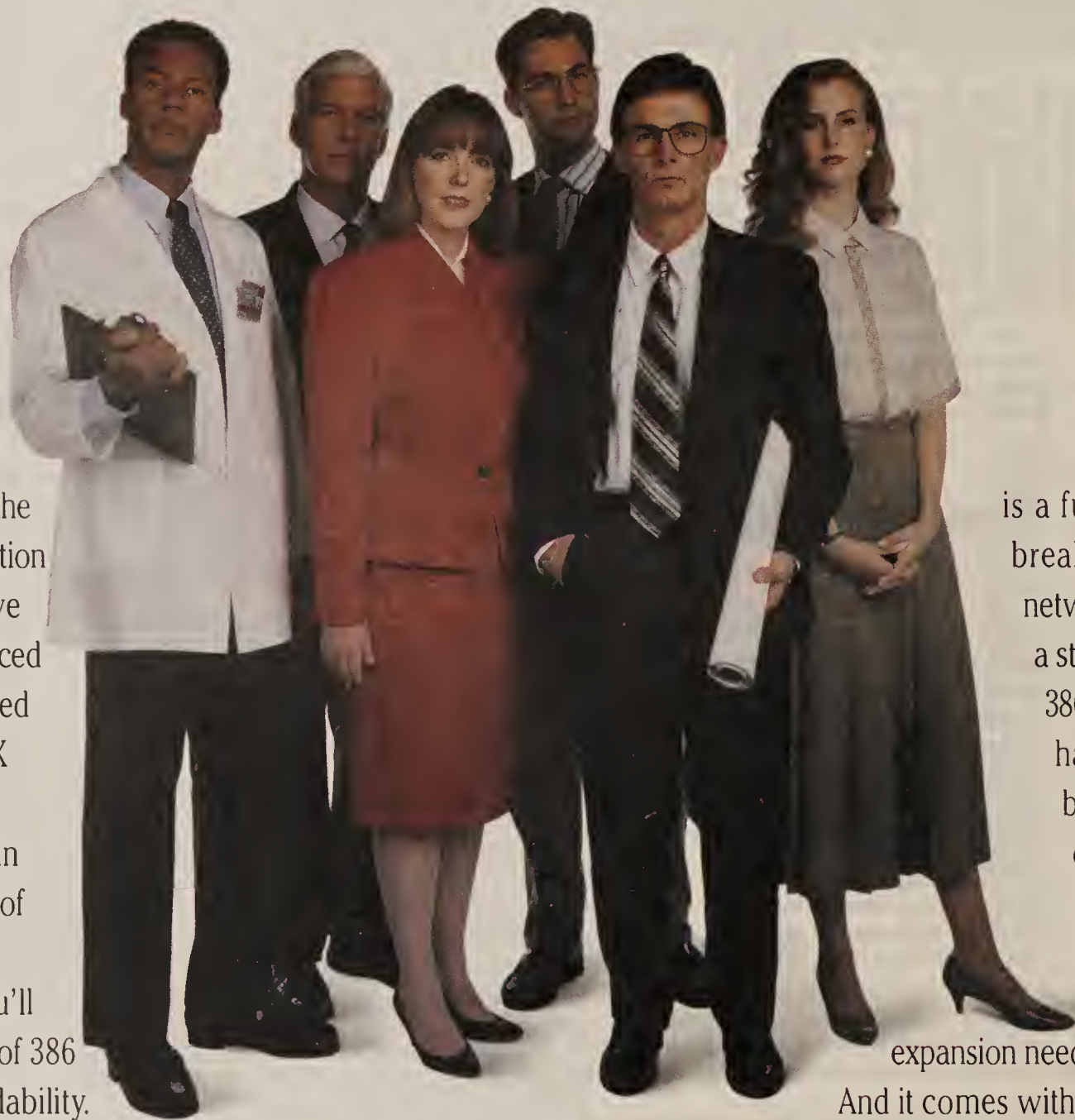


The Early User Program version of Dialog System 2 gives easy access to Presentation Manager or SAA CUA objects.

For more information about Dialog System 1.1 or Early User Dialog System 2, call Micro Focus today at 1-800-872-6265 or 415-856-4161.



# What does Compaq give 386 users who expect the moon?



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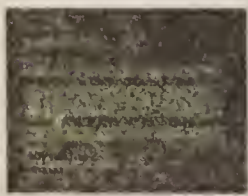
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Come look at the COMPAQ DESKPRO 386N Personal Computer, for example. This machine

is a full-function PC with breakthrough features for networked environments. As a stand-alone PC, its 16-MHz 386SX microprocessor handles all of the general business applications our other 386SX-based PCs run. With so many integrated features, you can take care of your expansion needs using only two slots.

And it comes with a host of unique network features like multilevel security, making it the best full-function personal computer for connected environments. All of this fits neatly into a space-saving design.

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# The stars.

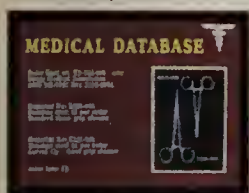
Project managers and other general business users will find everything they need to manage databases and speed through complex

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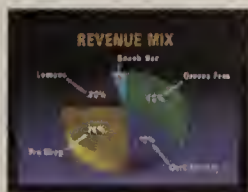
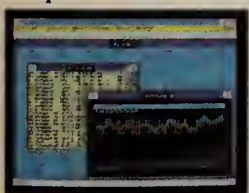
of information as well as engineers who work on generating complex



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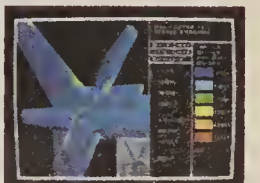
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two-dimensional CAD drawings.

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# PC-based CASE helping bank boost productivity

## ON SITE

BY MICHAEL FITZGERALD  
CW STAFF

CHICAGO — At First National Bank of Chicago, the emphasis is on becoming the first bank to win the U.S. Department of Commerce Malcolm Baldrige National Quality Award, and the bank's systems group is leaving no stone unturned to qualify for the award, including a brand-new move away from mainframe-based code development to doing computer-aided software engineering (CASE) on personal computers.

"Our thrust is to get the Baldrige award, and we're just looking for new ways to continually increase quality, said Martin Bronstein, senior vice president of customer services group systems development at the bank. "I'm not going to lie to you and say that the PC products are one of our main strategies," but moving CASE development onto PCs will improve delivery time for new products, primarily in the highly competitive cash-management market, Bronstein said.

The First, which has 4,500

PCs and is also an intensive user of large IBM mainframes and Tandem Computers, Inc. mini-computers, has been using CASE tools for three years, starting with a pilot version of Texas Instruments, Inc.'s Information Engineering Facility (IEF).

About two months ago, the bank installed and began using IEF Version 4.1 for OS/2 on several PCs in its development area. Now, while the final code generation still must take place on the mainframe, all the initial development work and code generation can be done under OS/2.

### Saving time

Despite the nascent nature of the PC effort, Bronstein said that development time will be saved just in terms of not having to upload code after each development stage to check the progress of the program.

Today, IEF 4.1 is being used to develop projects for cash management, sales and marketing and collateral transactions.

The First has also moved to develop database applications on the PC. It licensed Oracle Systems Corp.'s Oracle for AIX in November 1989, and it now has

some eight applications under development, including three for marketing, one for international trading and an internal systems development tool.

Neither tool has been a breeze to implement and use effectively, although Bronstein joked that he is having more success with applications development than with a "take a businessperson to lunch" drive launched by the IS group 18 months ago to strengthen relations with users.

For instance, while he is pleased with Oracle's flexibility, "we're suffering through support issues on Oracle AIX, which is not at the same level as [Oracle] is on some of the other Unix platforms," Bronstein said.

"We don't think Oracle is easy to learn. We think they're making a lot of money off their consulting services, Bronstein said, although he added that the First had no expectations otherwise, and it negotiated its contract to include ample service.

Working with IEF "has been a slow process," Bronstein said. "We've had some successes; we've also had one project where

we got killed on the scope, and we eventually stopped the project and took a step back because a \$1 million project was turning into a \$3 million project." Bronstein is quick to say that IEF was

productivity within the next 18 months, especially when dealing with systems maintenance. He added that time-sharing option expenses for the programmers using IEF have gone down almost 90% since the First started using IEF.

Bronstein said he thinks IEF and Oracle will be important strategic tools that will help his department be more active and more able to "adapt to a market where the product life cycles are going to be shorter, we need to get products on the marketplace quicker, and change is going to be a way of life."

The push to the Baldrige Award also represents an overall change in the way IS does business.

"What we're trying to do is have the business managers prioritize [development needs] on a business basis and then allocate the [programming] resources based on the business needs — not the classic way of saying

ing to a business group, 'you have 10 [programmers], do what you want,' " Bronstein said.

"That's a very big change in mentality, and it's not easy to implement," he said.



Ralf-Finn Hestoft/Saba

The First's Bronstein is hoping to increase quality and win national attention

not the problem with the project.

Overall productivity has not increased for the bank's programmers since they started using IEF, but Bronstein said he does expect to see increases in

# Fresh signs of multiprocessor standard

BY RICHARD PASTORE  
CW STAFF

Hardware vendors in the multiprocessor personal computer market have largely been going their own way, investing millions of dollars in architectural design and then hoping third parties will provide customized support. This strategy has limited the players on the hardware, software and customer sides.

However, signs of potential change came through last month when two hardware vendors and two software firms announced support for M/PAX, a multiprocessor chip set announced in February by Chips and Technologies, Inc.

M/PAX is a symmetric multiprocessor design that supports a mix of as many as six Intel Corp. I486 chips, Motorola, Inc. 68040 chips and reduced instruction set computing processors. It is compatible with IBM's Micro Channel Architecture (MCA), the AT bus and the Extended Industry Standard Architecture (EISA).

Chips and Technologies has been positioning the platform as a potential standard for third parties. "It's a lot of work to design and get one of these systems up and running," said Mi-

chael Ares, Chips and Technologies' marketing manager for advanced systems. "We want to bring this technology to these manufacturers at the lowest up-front cost."

A standard chip set could bring more vendors to the marketplace at lower price points and could encourage support from third-party peripheral and operating system vendors.

### Four on board

The two hardware firms that signed on at Comdex/Fall '90 were Arche Technologies, Inc. and American Megatrends, Inc. Both companies' machines are in the prototype stage and are expected to debut next year.

The Santa Cruz Operation, Inc. and Corollary, Inc. also announced software support for the chip set. The companies unveiled a port of their multiprocessor version of Unix MPX and SMP Unix kernel, respectively.

Despite commitment from these firms, setting a true standard will not be easy. Companies such as Compaq Computer Corp., which has invested millions in multiprocessing development, are not likely to adopt someone else's standard.

"Chips and Technologies narrows the number of flavors out

there, but you'll still have three or four of these architectures," said Frank Dzubeck, president of Communications Network Architects in Washington, D.C.

The chip set "is going to bring the multiprocessor technology to a wider variety of vendors at a lower cost," said Frank Michnoff, an analyst at Meta Group, Inc. in Westport, Conn.

While clone makers may have cheaper access to the technology, they still face expenses and hurdles that could keep prices high and delay system rollouts, analysts said. These may include licensing the MCA or EISA buses and developing advanced disk array technology.

"It's not just like building a classical PC; it's a whole different expense category," Dzubeck said, adding that this is one reason for many vendors' hesitancy to support the chip set.

Another factor that may slow M/PAX adoption is the dealer support issue. Clone manufacturers typically sell through less service-oriented dealers and mass merchandisers — segments ill-equipped to support high-end systems.

Also, while major firms can afford specialized multiprocessor training for their dealer channels, clone vendors may not have

the same financial capability.

Chip sets such as M/PAX may have their biggest impact five years down the road, when dealer support is no longer crucial. "In the future, users will get

used to this [multiprocessor] concept and have the support people in-house," Michnoff said. At that point, multiprocessor clones could proliferate and prices will plummet, he said.

# DG extends service to cover customers' Sun equipment

BY SALLY CUSACK  
CW STAFF

WESTBORO, Mass. — Moving to establish its presence as a service provider, Data General Corp. recently announced that it will now offer complete service to all DG customers using Sun Microsystems, Inc. equipment.

This is the first attempt DG has made to service nonproprietary workstations, servers and personal computers in multivendor network environments. The company has been providing service on other vendors' peripheral equipment, such as printers and disk drives, since 1987.

According to Paul Phaneuf, director of services marketing at DG, the company does not have any hard data detailing the number of DG sites with Sun equipment. However, DG estimated that the number of dual-platform environments is sizable.

DG's Motorola, Inc. 88000-based Avion workstation entered the reduced instruction set computing-based sector in 1989, when many sites had already committed to Unix and had installed the Sun workstations.

The new service agreement is based on a three-year contract between DG and Apex Computer, a Redmond, Wash.-based firm that specializes in fourth-party service for the Sun environment. Apex is training DG field engineers and technicians and providing spare parts inventory.

The program will initially begin to be implemented in 14 U.S. cities: Atlanta, Boston, Chicago, Dallas, Detroit, Houston, Los Angeles, New York, Philadelphia, St. Louis, San Francisco, Seattle, Washington, D.C., and Orlando, Fla. Same-day four-hour response and next-day response features are optional.



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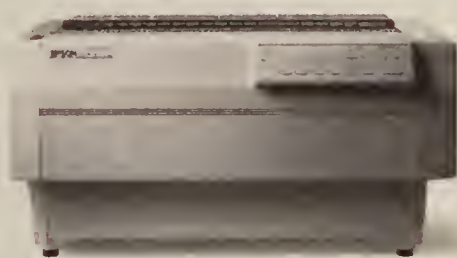
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## Keefe

CONTINUED FROM PAGE 41

perhaps that explains the note of urgency with which this message is usually delivered. It's even more interesting, given that users are getting to be real good at turning up their noses at vendor directives and "hints" that *they* think don't apply to their sites.

For example, OS/2 was supposed to be the second coming of operating systems, obliterating ugly, clunky DOS from the desktop. "Ummmmmm, I don't think so," chorused the user community. So today, while DOS is undergoing a revitalization of sorts, OS/2 is languishing in a pool of disinterest, relatively

speaking.

More recently, also at Comdex, an IBM executive got his knuckles rapped for giving a less-than-illuminating answer to a question about a LAN Manager technology direction announced one year ago. An understandably irate user snapped back that this was just the sort of duck that users were sick of. At a number of sites, this frustration has translated into an unwillingness to consider any LAN Manager-based server until some definite answers are spelled out.

There are countless examples of vendors attempting to either lay down the law or nudge users in the "right" direction. But the question is, right for who?

Look at Intel's "no 286" campaign, IBM's Officevision, Microsoft's LAN

Manager, Lotus' licensing policies regarding "shadow" copies, anyone's Unix, or the upgrade-itis sweeping the industry. How successful have these pushes really been?

Companies may be standardizing on the 80386, but they aren't buying them in droves, and they aren't deep-sixing their installed base of 80286 machines either. And these same users don't buy Windows 3.0 viability on a 286, no matter what Microsoft says.

They aren't convinced that LAN Manager is reason enough to dump Novell's Netware, and they aren't satisfied with Officevision and its oft-delayed upgrades and grudging support for the DOS world. In some cases, laptop users are protesting Lotus' licensing policies

by taking their business elsewhere, or at least threatening to consider it.

And more and more, users are digging in their heels when it comes to software upgrades. "I have a serious question whether even a tenth of my software upgrades are worthwhile," said Alex Kask, treasurer for the Microcomputer Managers Association, Inc., and a micro manager responsible for thousands of PCs.

Instead of blindly upgrading, users are beginning to question the value to be gained by moving up.

The point is that you can't shove technology, or rules governing its use, down users' throats. No matter how quickly users seem to acquiesce, when push comes to shove, it never works. Vendors have to start from the position that whatever they do has to accommodate existing real-life user situations.

Wordperfect is a company that has taken this to heart, even to the point of going a little overboard. But whatever Wordperfect deems an appropriate technological direction is open to change if its users — and it doesn't even have to be most of 'em — suggest otherwise.

Software Publishing Corp. has caught on as well. Once an ardent OS/2 supporter known to gnash its teeth over Windows, Software Publishing co-founder Fred Gibbons is taking the lead from his users these days. If they want it, he'll do it. If they don't, he won't. He's learned it can be painful otherwise. Now, if the rest of the vendor community would just catch on.

Keefe is *Computerworld's* senior editor, PCs and workstations.

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## Zeos introduces lightweight mini

ST. PAUL, Minn. — Zeos International, Ltd. recently unveiled a \$2,295 notebook computer, based on the Intel Corp. 80386SX chip. The machine, weighing less than seven pounds, will come standard with 1M byte (expandable to five) of random-access memory, IBM Video Graphics Array display, a 20M-byte hard drive and a 1.44M-byte, 3.5-in. floppy drive.

Zeos has made a name for itself through pricing, and the Zeos Notebook 386 is no different.

"That's an aggressive price point," said Bruce Stephen, microcomputer analyst at International Data Corp. in Framingham, Mass. Stephen added that he expected prices on SX notebooks in general to drop quickly.

Zeos spokesman Rick Apple said the company decided to release the 386SX because of strong demand for its 286-based notebook machine. Zeos has priced the 386SX at \$300 more than its 286 notebook. It will begin shipping the product by mid-December, Apple said.

However, it is not clear that low price alone will guarantee Zeos a spot on corporate shopping lists.

"Zeos is certainly growing, and has to be viewed as one of the up-and-comers in the mail-order channel," Stephen said. "They're making money and broadening their product line. I think they've attracted attention because of the low price point — this is a commodity game."



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**THE CHALLENGE OF PERSONAL COMPUTERS**

**NEEDS OF THE '90s**

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**APPLICATION SOFTWARE: THE CATALYST**

**DIAGNOSTICS AND SOFTWARE**

**FUTURE SHOCK**








*"WITH THE AMOUNT OF MONEY SPENT ON IS OVER  
THE LAST 10 YEARS, I COULD HAVE BOUGHT TOYOTA  
AND NISSAN OUTRIGHT."*

*—FORMER GENERAL MOTORS CHAIRMAN ROGER SMITH*



# INFORMATION SYSTEMS: THE NEXT 10 YEARS

OVER THE NEXT 10  
YEARS, MAINFRAME  
COMPUTERS WILL CON-  
TINUE TO PROVIDE  
CORPORATE-WIDE  
ACCESS, CONNECTIVITY,  
CONTROL AND MAN-  
AGEMENT OF INVALU-  
ABLE CORPORATE DATA

ASSETS. IN THE INCREASINGLY COMPETITIVE BUSI-  
NESS CLIMATE OF THE '90s, MAINFRAMES WILL DO  
THIS BY ANSWERING THE CALL FOR DISTRIBUTED  
PROCESSING POWER OVER WORLDWIDE NETWORKS.  
THAT IS WHAT THEY WILL DO; WHAT THEY WILL NOT  
DO IS GO AWAY. ■ CONSIDER, AS AN EXAMPLE OF  
THIS URGENT NEW "EXTENDED ENTERPRISE" ENVI-  
RONMENT, A TYPICAL HIGH TECH MANUFACTURING



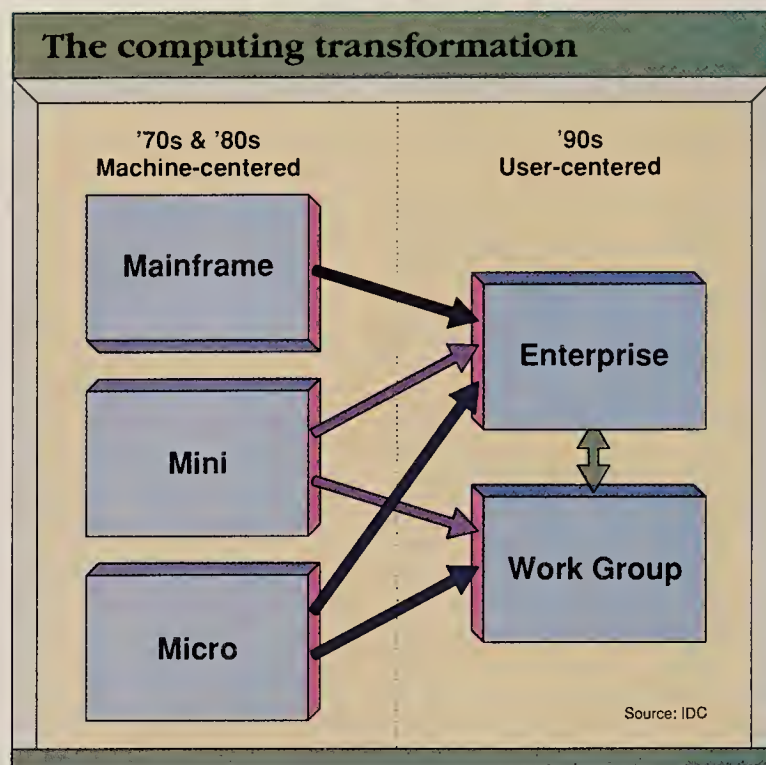
company with headquarters in the northeastern United States. Its manufacturing operations are centered in Asia. Its subcontracted design work is done in Ireland. Sales offices are sprinkled around the world with coordination in San Francisco. Research and Development is in Germany. A truly global operation. Corporate IS is responsible for ensuring the smooth, secure and timely transfer of sensitive company data across all these far-flung locales. In reality, that means seamlessly linking dozens of different systems and networks that are subject to different government regulatory restrictions. Mainframes make this sprawling international operation work by acting as hubs that connect the various locations.

In the late '80s, data processing architectures were compressed from three tiers to two: The machine-oriented dominions of mainframes, minicomputers and PCs were broken down and reformed into user-oriented enterprise and work-group domains. This new architectural focus has received various labels, including "cooperative processing" and "client/server" computing. No matter what it is called, traditional mainframes will play the central role in its operation.

### THE DATA WAREHOUSE

The mainframes of 1995 will be characterized as data vaults or warehouses for the enterprise. These huge providers of services will control communications, provide security, and manage data access and throughput for a system of interlocking databases. This will lead to a high level of diverse database integration, enhanced system integrity, and in the end, a cost-effective array of hardware, software and personnel.

Despite the much-publicized movement toward downsizing, few companies expect to erase the need for large mainframes any time in the near future. In fact, the strategic plans of most large organizations run to the contrary. The reallocation of selected processing, and in some cases selected control, to workstation-based, end-user depart-



Mainframes are poised to play the leading role in the new computing architectures of the '90s.

ments is generating an increased workload for mainframes. This shows the role of mainframes is becoming more, not less, important. There are several reasons:

- At the high end of the processing-power scale, large mainframes cannot be readily and cost-effectively matched by incremental additions of small processors. This is especially true in high-volume transaction processing

- Mainframes have sophisticated security mechanisms for both access of data resources and secured transmission of sensitive, valuable data

- Formal and standardized procedures and products for reliable backup and recovery on mainframes have been developed over the years, insuring system integrity. The lack of these procedures and products is the most frequent cause of failure for distributed networks linking smaller machines

- Mainframes provide the automated control and integration of storage devices as well as other peripherals and resources necessary to carry on a global business

- Mainframes provide system control and all-important auditing facilities that maintain data, applications and operating-system integrity.

### THE CHALLENGE OF PERSONAL COMPUTERS

Since their introduction in the early '80s, personal computers have been touted as "mainframe killers." It is true that, incrementally, the growth of power in the form of millions of instructions per second (MIPS) has increased much more rapidly in personal computers than in mainframes.

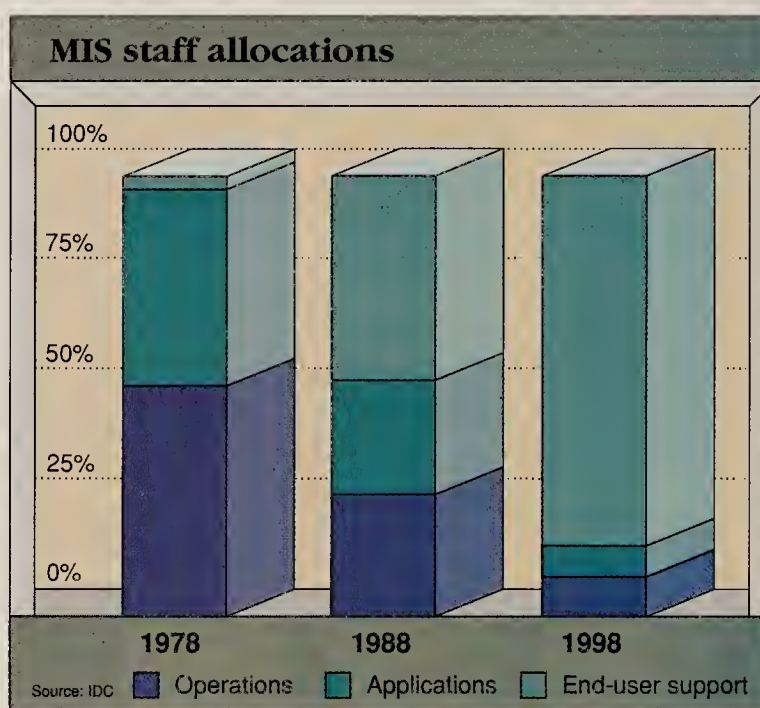
This remarkable growth in raw processing power played a major role in the migration of specific applications from mainframes to smaller machines such as personal computers.

PCs have several distinct competitive advantages over mainframes:

- They are easier to learn, easier to install and easier to use, particularly for the non-DP-professional

- Relative to mainframe computing power, personal computers can provide a very cost-effective solution for certain types of standalone or departmental processing such as spread sheets, word processing or application development

- Hardware and software prob-



Tending to an increasingly computer-literate end-user population will become a major preoccupation with MIS staffs by 1998.



lems on PCs require relatively lower maintenance skills which are widely available.

However, while PCs are very powerful when properly applied to the appropriate problem, they are not viable alternatives to mainframes for jobs that require robust security, task interleaving with other data processing jobs, and high rates of transaction processing. There are many recent examples of corporate data processing jobs that were offloaded to PC networks. Within months, MIS directors were asked to recapture and reschedule these jobs back to mainframes due to poor security, and the difficulty in administering, managing and repairing local area networks (LANs). Few organizations have realized the optimal organizational structure required to properly and successfully support distributed processing across LANs.

## NEEDS OF THE '90s

Long gone are the days of 15% annual staff growth with salary increases to match. If anything, staff reductions are the order of the day. Commercial data processing departments are realizing that the work force needed to support large computing systems must be closely controlled and, in many cases, reduced. Further, retained personnel are being asked to expand their expertise and work toward achieving the objectives of the core business.

In these lean times, both MIS managers and vendors are faced with a paradox. Corporate management says the computing complexity can increase as long as personnel and training required to support and manage it declines. Given this new criterion for buying computers, hardware vendors will be under constant pressure to provide more cost-effective systems.

The computer processor environment over the next five to 10 years will continue on its heterogeneous path. Along this path, corporate data processing departments are moving into an era of hardware specialization. They are dedicating mainframes to the management of very specific business situations such as automated teller machines, on-line transaction processing (OLTP) and batch processing. It is not unusual for each of these dedicated processors to come from different vendors. Therefore, the challenge is to maintain multi-vendor hardware solutions with limited staff.

## MAINFRAME MARKET DYNAMICS

In a recent IDC survey of 75 senior MIS managers with IBM 3090-class mainframes, respondents were asked to discuss their plans for acquiring large computers over the next three years. Of those who are planning an acquisition during that time period, 58% are considering IBM, but models other than the newly-announced ES/9000 series. Nineteen percent are considering a plug compatible manufacturer (PCM) solution from vendors such as Hitachi Data Systems (HDS) or Amdahl. Twenty-three percent are considering a non-IBM-compatible mainframe or Unix acquisition. The fact that large-processor users are expressing an early, tentative

Prior to the fall of 1990, a period that saw several important announcements concerning mainframe technology, the mainframe market shares for the leading vendors were:

IBM.....	68%
Unisys.....	17%
Amdahl.....	9%
Hitachi Data Systems .....	3%
Bull HW.....	2%
Control Data.....	1%

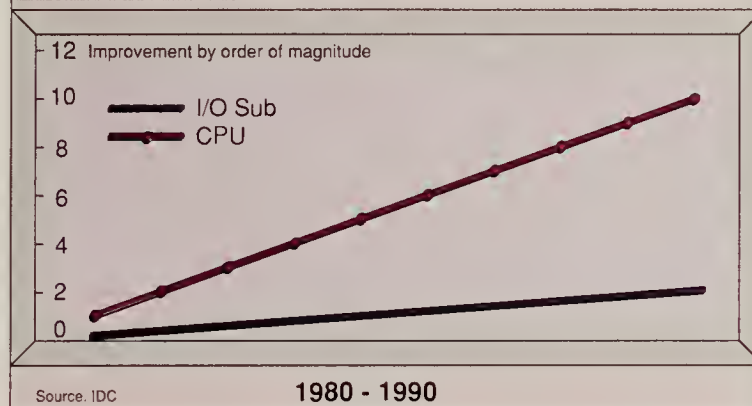
The 1990 competition picked up during June when HDS announced the industry's fastest processor, the model EX/420. The EX/420 is rated at approximately 150 MIPS. This introduction was followed in short order by rapid-fire announcements from Amdahl, Fujitsu and IBM. This series of announcements virtually restructured mainframe technology.

The new machine families offer dramatically new features and functions with the promise of even more advanced features over the next several years. HDS seems to have come out a winner in this new-product derby as 16% of survey respondents say their companies are now planning on buying HDS machines. Otherwise, the introductions did not seem to have a great impact on future brand loyalty. Some 62% of respondents still expect to buy from Big Blue.

Internationally, five-year mainframe-market growth in the Pacific Rim is expected to double that of the rest of the world. The Japanese, Australian and Asian markets pose an interesting dilemma for mainframe makers. IBM systems compatibility is less critical in these markets than in the U.S. As a result, several European and Far Eastern manufacturers have aggressively carved out and maintained a significant market share. Thus, IBM and the PCMs have found themselves in the unaccustomed position of playing catch-up.

The aggressive marketing of the PCM vendors, joint ventures and far reaching marketing agreements among industry giants have IBM looking anxiously over its shoulder. What it sees is Fujitsu buying International Computers Ltd. outright, and 42% of Amdahl. In another similar move, Electronic Data Systems bought 20% of HDS. Rarely lacking in marketing acumen, IBM is expected to have more than 100 strategic alliances of its own, mostly with

## Growth in computing power vs. I/O subsystem power



As the growth of CPU performance has outstripped increases in input/output subsystem power, local area networks have been enlisted to offload mainframes.

approach to the newly-announced IBM ES/9000 is no surprise. Users typically warm up slowly to new machines.

Soaring mainframe growth, which reached nearly 20% at times during the past 20 years, gave way to a modest growth rate of 5% to 7% by 1990. Barring any unexpected and unprecedented technological breakthroughs, IDC predicts similar unspectacular growth—but not unspectacular profits—for the '90s.

The promise of mainframe longevity and the possibility of 70% profit margins has resulted in cutthroat marketing campaigns by IBM and the PCMs. Once a group much larger in number during the glory days of the "BUNCH," the PCMs are now limited to Amdahl and HDS. Both companies are expected to demonstrate staying power over the next 10 years.

The PCM marketing push has clearly been felt by the perennial leader, IBM, as that company's market share has slowly eroded. Big Blue has lost customers to the PCM vendors primarily on price/performance issues.



# 1,100

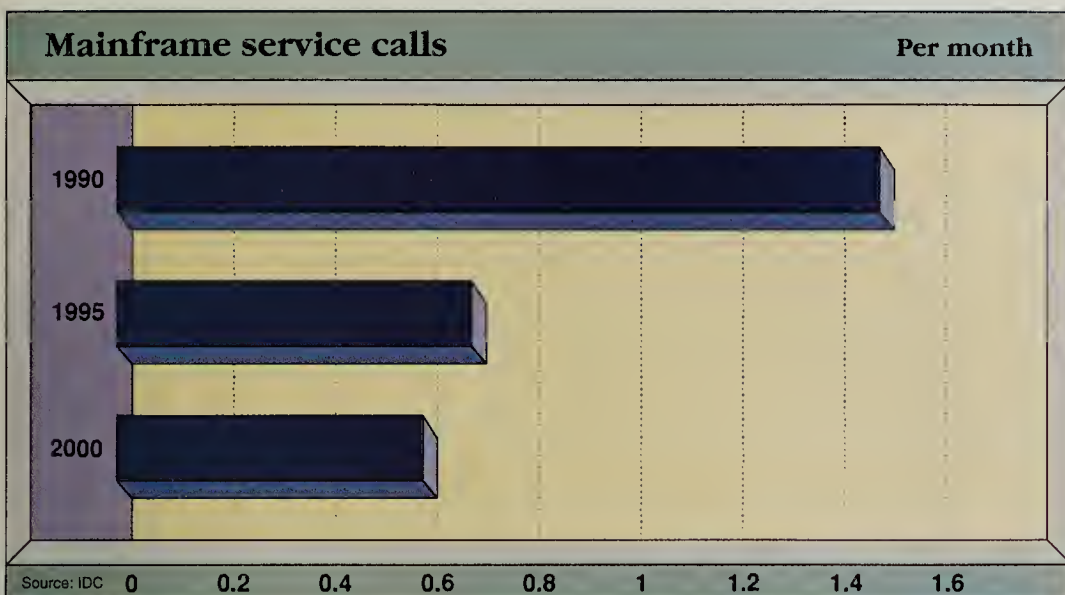
## **WE'VE DOCTORED THIS NUMBER.**

Hitachi, Ltd. has over 1,100 PhDs on staff. To the best of our knowledge, no single corporation has more employees with doctorates. Many of these highly qualified specialists work in areas that benefit the development of the mainframes and storage systems of Hitachi Data Systems.



**Hitachi Data Systems**





The decreasing number of mainframe service calls creates higher user expectations for large applications such as airlines reservations and banking.

software partners, before January 1, 1991.

Less than five years ago, the top price for the high-end machine in a mainframe family was in the range of \$5 to \$6 million. Today, these machines exceed \$24 million. Add in the large margins which hardware designers require to support R and D efforts, and these price tags will only climb. Despite such astronomical costs, however, there is no sign that the world's largest corporations are reluctant to buy. They have to buy if they want to compete.

On a positive and less expensive note, significant savings can be realized from operational consolidation. Money can also be saved by agreeing to new hardware purchases only if free software licenses are included. For example, an IBM buyer might save the \$250,000 yearly cost of DB2.

Mainframes have a definite advantage over smaller computers in this area.

### TECHNOLOGY ADVANCES

Technological advancements came with dizzying rapidity in the '80s, and will continue to do so in the '90s. Processors, from the most powerful mainframes down through the least powerful personal computers, increased in speed dramatically. We have reached the point now where speed improvements of 25% to 30% per year are taken for granted—and even demanded—by some end users.

General-purpose processor speeds are now in the 150-to-210 MIPS range and expected to reach 300 to 500 MIPS by 1995. They will hit 1,000 MIPS and more by the year 2000. Fujitsu, a leading Japanese main-

frame manufacturer, hints that it is developing a 600-MIPS machine. When it will reach the market is a matter of debate. At this point, there are very few applications that require or can fully take advantage of that kind of power. Actual applications that could utilize such fast machines are generally found in the military.

As commercial applications begin to require such processing power, it seems likely that a customized configuration will be developed for each individual installation. This is not an extraordinary expectation given the sums of money that will be invested by users.

Advances in processor design include the implementation of improved instructions that control processing within the computer. Smaller machines with reduced instruction set computing (RISC) and scalable processor architecture (SPARC) are now common, although such technologies are not expected to gain widespread use in the mainframe class until 1995, at the earliest.

Despite advances in hardware miniaturization, dramatic reductions in the size of mainframe computers are not expected soon. A quick look inside almost any current large model reveals considerable open space that is required for easy access.

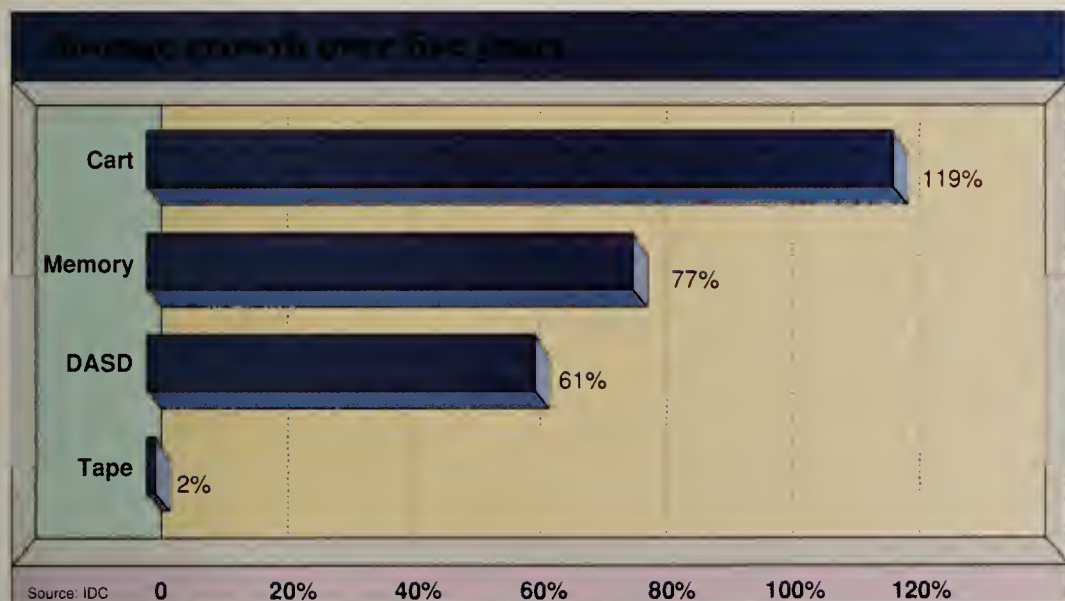
Despite all the technological gains, however, the disparity between the computer's ability to "crunch" data and its ability to move data through input/output subsystems is disappointing. CPUs simply cannot move data around as fast as they can process it. One solution to this shortcoming is the use of work-group-oriented LANs.

This disparity continues to exist even after the introduction of IBM's Enterprise System Connection Architecture (ESCON). This dramatic new channel architecture uses a light-emitting diode as the light source, and fiber-optic cable as the transmission medium. ESCON allows direct-access storage devices (DASDs) to be located up to five miles—instead of only several hundred feet—from mainframes. It also provides 10M bit/sec transmission I/O speed, which, although fast, still lags behind internal CPU speed.

In order to put the issue in perspective, consider this: CPU cycle times are in the nanosecond (one-millionth of a second) range. I/O subsystems operate in the millisecond (one-thousandth of a second) range. If we arbitrarily assign one nanosecond as one hour, then one millisecond is approximately 41 days.

### REACHING FOR RELIABILITY

Asked to comment on mainframe service calls, survey respondents say they expect



"DASD farms" are a hot storage topic, but self-loading "juke box" cartridges are slated for faster growth over the next five years.



the number of these calls to decrease from 1.5 to 0.6 a month by the year 2000. In such a stable environment, users will demand an even higher rate of reliability for such applications as airlines reservations, banking, credit card processing and point-of-sale transactions. While the majority of today's mainframes is not fault-tolerant, there are vendors that have specifically designed their machines to offer 100% reliability. The demand for such perfection will surely engender industry-wide, mainframe fault-tolerance within the next 10 years. It is needed now.

Mainframe reliability is worth its weight in gold. Retail credit card operations are a good example. Research indicates that if a retail credit card validation is delayed longer than 15 seconds, the consumer will offer another card. Thus, the first credit card company loses an opportunity to, in effect, grant a high-interest, short-term loan. Mainframe makers are motivated by the fact that credit card companies typically purchase whatever processing equipment brings them lower response times.

## THE "LOGICAL" MAINFRAME

The 24-hours-per-day, seven-days-per-week, 365-days-per-year processing schedule is standard operating procedure in most large organizations with critical time requirements. The future decade will carry this a step further by making any downtime unacceptable.

This demanding environment is spawning what IDC calls "distributed data center complexes." Distributed data center complexes are a collection of geographically diverse data centers coupled by wideband, wide-area communication capabilities. Each complex is tightly coupled with all other complexes, sharing central memory, storage and other mainframe facilities. The number of central processing units contained in each of these complexes is increasing. Currently, there is a maximum of eight. That number could reach 24 by 1995.

In this environment, each of these distributed data center complexes—while to a large degree self-contained—requires information sharing with smaller, "mini-mainframes." These unattended "lights-out" systems could be located regionally or in departments.

Overall enterprise control of such communication will be accomplished by a "log-

ical" mainframe—a distributed data center computer that stands logically apart from any other CPUs. This master computer will not be invasive. It will not make modifications to any of the "outlying" operating systems. Its automated process control will not retard the performance of the host systems. Its strategic decisions will be made transparently and according to priorities established by management.

## EXPERT SYSTEMS

In order to manage and control processing, enterprise-wide systems of the future will require more knowledge than any one person can supply. Artificial intelligence, or

According to the IDC survey, portability and integration of multi-vendor hardware and software solutions is rated as one of the most pressing issues facing IS management over the next five to 10 years. The object-oriented environments used by expert systems address those two issues by raising the level of portability and easing multi-vendor integration. As a result, the accumulated expertise gathered from many highly technical disciplines is transmitted to organizations that would otherwise go without.

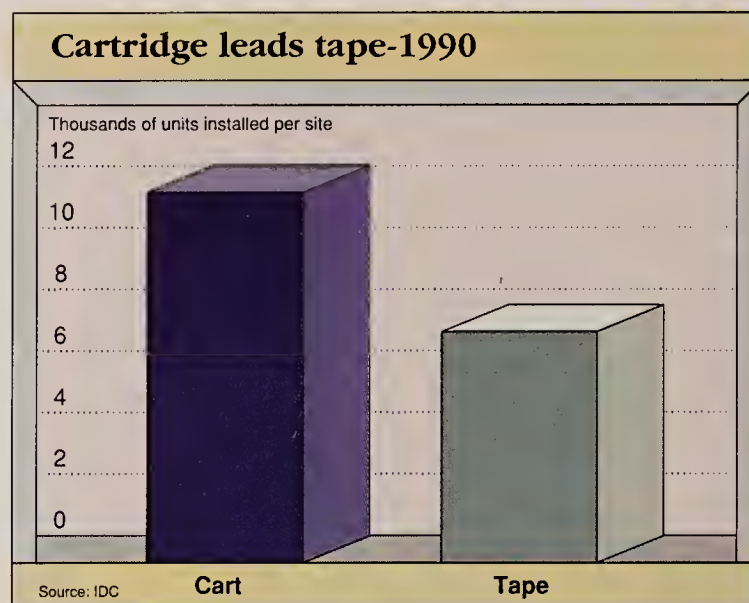
## PERIPHERALS

When speaking about mainframes, the term "peripheral" has become synonymous with data storage devices and printers. While they play a significant role, there are also vast numbers of personal computers and workstations urgently requesting data from mainframe-based master data repositories.

In order to provide that support, peripheral storage devices, whether they be traditional, rotating, DASDs, or some other medium such as optical disk, will be used heavily. Survey respondents believe that the growth of DASD will increase over the next five years by a robust 61%. However, they also believe that tape storage will grow an even more impressive 119%. That growth is largely reserved for the newer, smaller cartridge tapes, as opposed to the traditional reel-

mounted versions. The cartridge devices offer several key advantages, but one stands out: the ability to automate the mounting process with so called carousel or "juke box" hardware. This eliminates virtually all human intervention.

While optical disk storage devices have been available for some time, acceptance of these devices within mainframe environments has not been overwhelming. Currently, write-once-read-many (WORM) technology is finding a niche in such areas as image processing and microfiche replacement, and is much favored by government agencies such as the IRS. Advances in this technology, such as multi-function disks, are expected to expand the market, but not on a large scale. Mainframe optical-disk devices made up less than 5% of disk shipments in 1989, and barring an unexpected breakthrough, that market share is not expected to increase dramatically over the next five years.



The average IDC survey site has 13,000 cartridge tape units installed, as opposed to only 8,500 reel-based units.

more precisely, mainframe-based expert systems, will help fill this knowledge gap. These systems are comprised of knowledge and rules built by extracting decades of experience from hundreds of hours of interviews with human experts. Expert systems will gradually replace the human component and make the thousands of split-second decisions needed to run a large mainframe complex on a daily basis.

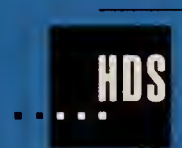
Without such systems—and they are finding their way into data centers now—the complexity of running data centers efficiently will quickly push machine-operating personnel to their limits. They will be overburdened as schedules, workload balance, and the need for 100% uptime require processing that will be divided among distributed heterogeneous mainframes. The scope of the task increases significantly when performance, network, resource and data management are included.



# 55,000

## **WE'RE TRYING TO PATENT THIS NUMBER.**

Hitachi, Ltd. already holds over 50,000 worldwide patents. And that number continues growing. Last year 1,053 new patents were applied for in the U.S. alone, positioning Hitachi, Ltd. as the leading patent filer in the U.S. three out of the last four years. Many of these innovations are being directly applied to the products of Hitachi Data Systems.



**Hitachi Data Systems**



# 20,000

## **WE'RE PUTTING THIS NUMBER ON THE LINE.**

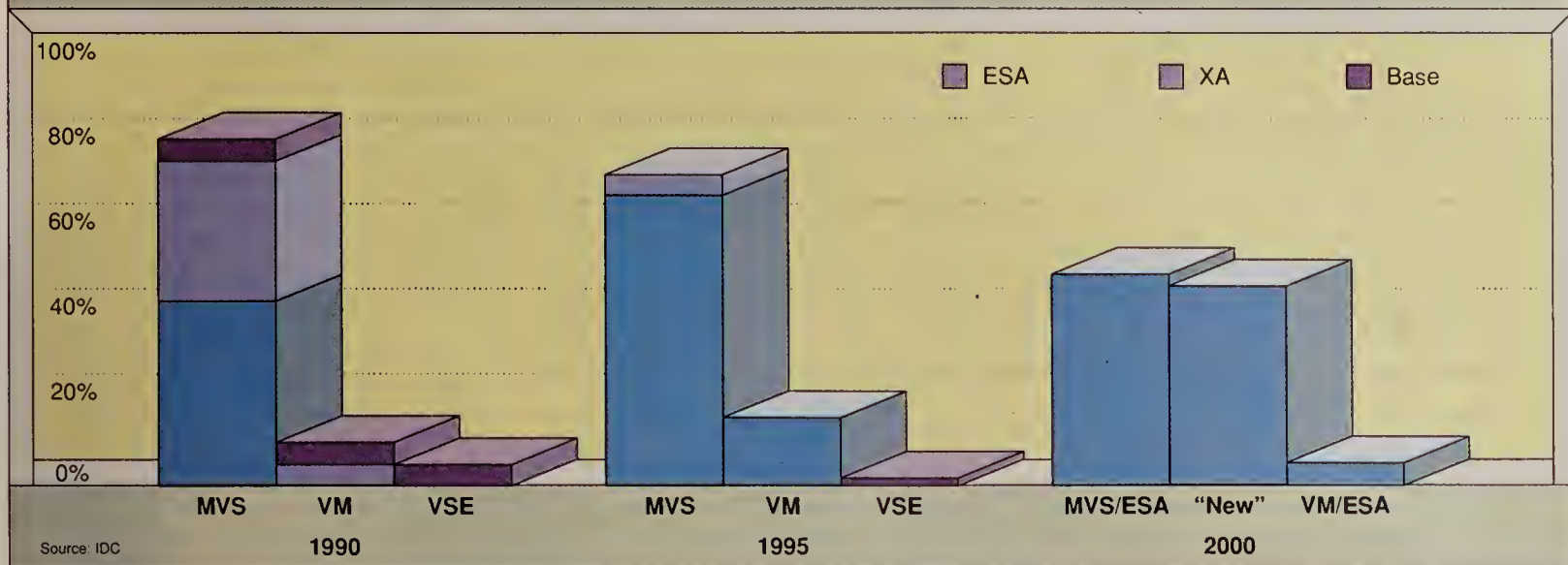
The Hitachi, Ltd. product line is over 20,000 strong and growing. This ranges from consumer audio and video products to bullet trains, medical equipment and hydroelectric power plants. It also includes the advanced computing products of Hitachi Data Systems, which benefits from the broad technical expertise of Hitachi, Ltd.



**Hitachi Data Systems**



## Industry-standard mainframe operating systems of choice in 1990, 1995 and 2000



Users anticipate the emergence of a new operating system by the turn of the century.

### FIBER OPTICS AT THE HEART OF COMMUNICATIONS

The explosion of peripheral input/output devices required by OLTP has engendered two new remote data storage entities. The first is the "DASD farm," while the second, more futuristic one, is the remote "optical-storage plantation." Success in moving very large amounts of sensitive data over long distances to either of these two requires reliable, high quality communication capacity. This capacity is increasingly being supplied by internal fiber-optic mainframe links and external fiber-optic networks.

The expansion of fiber-optic technology has given new life to remote sites. The combination of fiber and channel extenders can bring logical mainframe processing to any remote site. In the case of system failures, this same combination bolsters disaster recovery by greatly enhancing the reliability of continuous, on-line computing links to remote backup mainframes.

### OPERATING SYSTEMS: THE GLUE

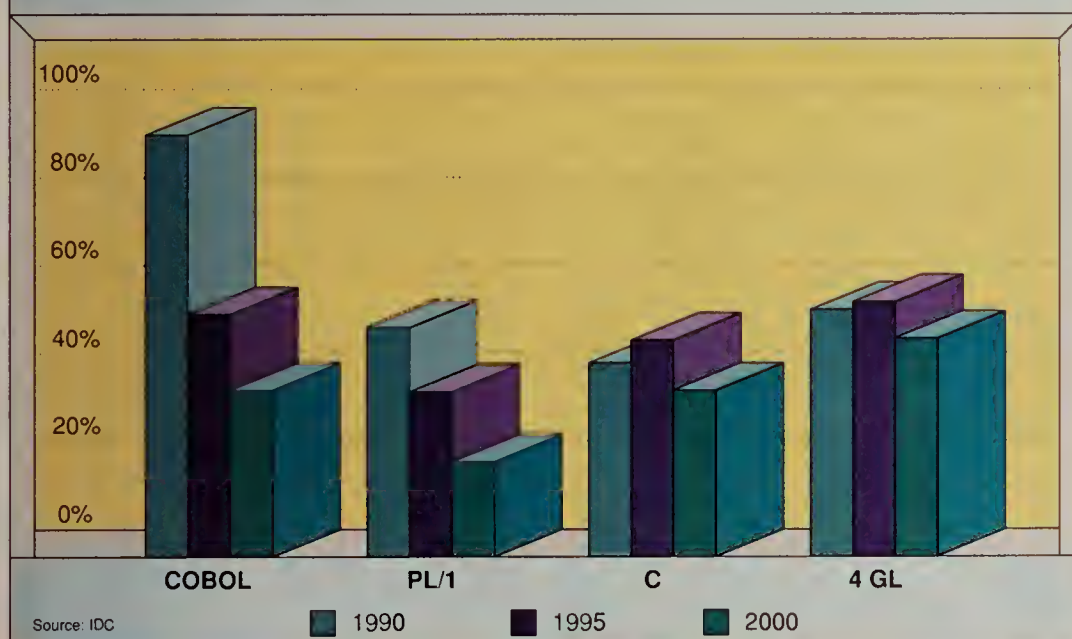
As mainframes increase in power, operating systems must keep pace. Sophisticated hardware complexities can be fully utilized if the software is easy for human

operators to use.

Mainframe operating systems must have the power and intelligence to operate in a near-fault-tolerant manner. They must be easy to install, maintain and integrate. Newer versions from IBM, Digital Equipment Corp., and others are following a clearly defined path toward these objectives. While each new year sees significant developments, survey respondents still expect their operating system to come from IBM over the next five years. Not surprisingly, sometime in the next decade, they expect an undefined new operating system to appear.

### Languages used

Mainframe users



The movement toward fourth-generation languages will slacken after 1995, as users look for something better.

### UNIX AND THE DATA CENTER

The Unix operating system, which originated in the late '60s at the Bell Labs division of AT&T, is well known for its flexibility in supporting long-distance telephone communications. Unix provides a simple, very robust operating system with an emphasis on fault-tolerance. Most of the major mainframe vendors have given a passing acknowledgment to Unix by supporting it or some close derivative on their platforms.

To date, however, the very traits that allow Unix to achieve fault-tolerance cause it to be functionally deficient in the sophisticated facilities required to support full-scale commercial applications. Of prime concern is the lack of tight, manageable security. Moreover, traditional mainframe users maintain that Unix has a shortage of operating system tools and utilities. This, they say, prevents the operations staff from closely monitoring and managing mainframes. Realizing this, soft-



ware vendors are rapidly offering more Unix system software.

Interestingly, Unix's lack of complex utilities and system software is viewed by many as a saving grace. They say the lack of utilities results in much simpler machine configurations, which in turn can lead to far less expensive operations.

The general feeling is that Unix has not yet become a full-function, commercially-oriented operating system. However, few doubt its potential. In fact, 15% of survey respondents state they are currently considering the use of Unix. However, only 4% say they will consider implementing Unix in the next five years.

## APPLICATIONS SOFTWARE: THE CATALYST

Applications will continue to drive the need for faster mainframes. The new application development paradigm will see application developers utilize new languages and tools that dramatically cut the time required to develop new applications. Programmers are already reducing the great bulk of their time spent writing third-generation computer code. But this expected transformation will not happen overnight. The survey reveals use of COBOL at 92% of the companies surveyed. Indeed, there are currently some 100 billion lines of COBOL code in existence.

The 92% figure is expected to drop slowly to 56% over the next five years, and to 35% in 10 years. Even then it will lead alternatives such as PL/1 and C. This adherence to COBOL is a reflection of the massive investment in installed code now existing in data processing libraries. It also reflects the difficulty in migrating away from applications that have no documentation or exist only as machine code.

While many additional application development departments would sorely like to migrate to a more productive fourth-generation language, the inability to safely understand the logical flow of 20-year-old programs with unnumbered patches remains a major impediment. Still, 57% of respondents currently utilize a fourth-generation language. That percentage is expected to increase somewhat over the next five years.

## DIAGNOSTICS AND SOFTWARE

In the future, mainframe hardware and software will work more closely than ever. In fact, as hardware gets less expensive, a phenomenon that occurs at a rate of at least 25% per year, sales will be made on the issue of software function. Manufacturers already realize that offering strictly hardware is a shortcut to disaster. In order to maintain market presence and share, most vendors will aggressively and closely integrate hardware and software. This will be most true in the area of maintenance and service.

The survey found 82% of respondents had installed some type of software-

software package that detects and calls in possible future problems.

## FUTURE SHOCK

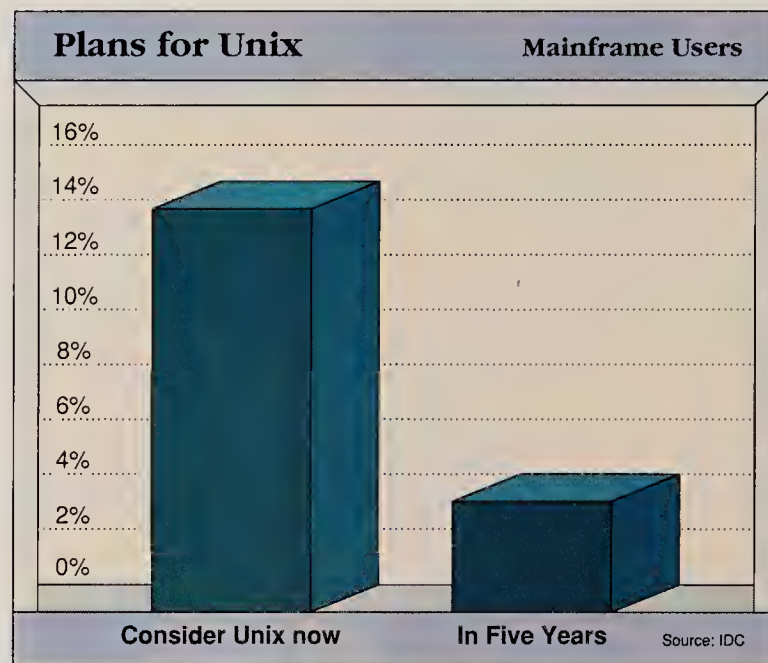
Data processing end users are becoming increasingly computer literate, a trend that will continue. They are growing more aware of the potential power that exists in the data center and demanding their share. This is not an unreasonable demand for the ultimate bill payer. Therefore, expectations will soar to the near-impossible, and the MIS departments will have to deliver. Measurable standards and service-level agreements will be developed and accepted, forcing MIS departments to comply with tightly-defined thresholds of reliability, availability and serviceability.

The role of MIS professionals will change significantly in this high-pressure environment. Their expertise will be used at higher levels within the organization; they will be viewed as enterprise consultants. Meanwhile, technicians will concentrate on training, custom-tuning hardware for specific business requirements, and problem solving.

Open architecture will give way to a completely object-oriented approach, where even the technicians will be all but immune to hardware and software configurations. The tedious definition of OLTP configurations, data communications networks, establishing

performance criteria, and monitoring a myriad of operating thresholds will all reside in software. Organizations will no longer be able to afford problem solvers. A new job description will arise, that of "problem preventer." Assisted by highly-automated software products, system operators will have expert support in managing machine-speed systems linked to multi-vendor networks and applications.

The era of the self-managed system is not far away. Systems of the 21st century will require so much sophistication and technical specialization they will have to manage themselves. The mainframe of 1998 will control the master console. It will direct the system to seek and maintain balance as determined by an "operator" that may be a computer located thousands of miles away.



based automated diagnostic capability. While many packages are available, most of those installed on mainframes will "sense" an impending problem before a critical stage is reached and actually call the manufacturer's service facility via an integral modem. Further, these diagnostic tools place a probability on impending failure and suggest replacement parts. Therefore, a technician dispatched from the vendor's facility will usually arrive at the installation with all parts required to fix the problem before it occurs.

IDC predicts that by 1995, advanced diagnostic capabilities will virtually eliminate outages. By then, diagnostic capabilities of one processor will help resolve problems with others. Automatic error recovery of circuits, channels and media devices will be the key to assuring 100% system availability. Currently, there is at least one mainframe-based hardware and



# 4

## **THIS NUMBER IS THE CORE OF OUR BUSINESS.**

We're Hitachi Data Systems. By applying the vast resources and expertise of our parent company to four key product areas, HDS has become a leader in both high performance and reliability. These product areas include mainframe systems, DASD, cartridge tape devices and semiconductor disks. One example of our innovation is the HDS EX™ Series of mainframes. With over 20 models to choose from, including our newest, most powerful EX 420, the EX Series protects your investment through a 30-fold growth path and complete compatibility.





# 203

## **THIS NUMBER KNOWS THE RIGHT NUMBER.**

In our very first year as Hitachi Data Systems, we added to our client list over 200 new companies from 36 countries around the world. To learn why, contact your local sales office. Or call HDS today at **(408) 970-1000**. Let us put together some numbers for you.

Hitachi Data Systems, 750 Central Expressway, P.O. Box 54996, Santa Clara, CA 95054-0996



**Hitachi Data Systems**



# Pro Gold: Power file manager, limited utilities



Unembellished with a lot of extras, Xtree Co.'s Xtree Pro Gold 1.3 holds the honor of being one of the most powerful DOS shells available.

Traditionally considered an experts-only program, Pro Gold's current capabilities, such as file viewing and a flexible approach to launching applications, make it more appealing to intermediate users. But beginners may still be put off.

Reviewers applauded Pro Gold's clear-cut approach to file management. Among other things, users can display and transfer files between two directories and file sets on the screen at the same time.

However, they said, Pro Gold comes up short in menu-making. There is no macro or programming facility for use in setting up application menus or DOS-command shells.

Pro Gold 1.3 also does not include features such as desktop utilities and telecommunications, but it does offer the ability to maintain a history of the last 15 commands issued from the DOS command line and a text editor. A file-compression program, which may be useful because Pro Gold takes up almost 800K bytes of disk space when installed, is sent free to registered users of Version 1.3 and is integrated with Version 1.4, a minor upgrade.

If you do not need all the features that accompany other shells, and if you feel confident in your skills, Xtree Pro Gold's \$129 price tag will buy you what reviewers consider possibly the best file-management capabilities around. Upgrades from previous versions cost \$40.

Compiled by free-lance writer Suzanne Weixel.

**Score calculations:** Published reviews: average of available numeric scores from reviews multiplied by a factor of 3. Analysts' ratings: average of 1-to-10 rating from product analysts multiplied by a factor of 2. Users' ratings: average of 1-to-10 rating from major users multiplied by a factor of 1.5. Cost evaluation: average of users' and analysts' ratings of the cost to get a product running multiplied by a factor of 2. The 1-to-10 scale: 1 is poor, 10 is excellent. Criteria are weighted in favor of expert opinion and most important areas. Vendor financials: No rating is available because Xtree does not publicly report financial data. The omission is reflected in the change of maximum score this week from 100 to 85.

## Reviews Summary

Criteria	Infoworld	PC Magazine	PC World
	5/5/90	6/12/90	7/90**
Ease of use	Very good	Fairly easy but not for novices	Poor
File manager	NC	Best power user's file manager	Good
File viewer	NC	Flexible	Good
Documentation	Good	NC	NC
Technical support	Very good	NC	NC
Value	Excellent	NC	Fair
Reviewer's score	7.8*	Editor's choice	NC

\*Ratings are based on a weighted scale of 1 to 10 where 10 is excellent. Only the Infoworld rating is included in the score. \*\*Version 1.4 reviewed. NC: No comment. These are excerpts from the reviews. Refer to actual articles for details.

**Xtree Pro Gold**  
(Maximum score: 85)

score:  
**64**

Points (maximum)	Category
<b>23</b> (30)	Published reviews
<b>15</b> (20)	Analysts' ratings
<b>11</b> (15)	Users' ratings
<b>15</b> (20)	Cost evaluation

(See financial information below)

## Xtree responds

The following are comments from Chris Williams, Xtree Pro Gold product manager, in response to the reviewers' assessments:

Xtree's mission is to make Xtree Pro Gold the best file and disk manager available. We want to make it available to beginners as well as advanced users.

It's the user interface and not the features themselves that make it confusing for novices. So we're planning to deliver an upgrade by the end of the year that simplifies the interface by implementing pull-down menus. This will make Pro Gold more accessible to beginners. But there are certain features designed for experts that beginners wouldn't use anyway.

## RATINGS

### What the experts say

Using a 1-to-10 scale, users and analysts rated product performance and cost to get the product up and running.

• Users: Tim Duncan, Anderson, DeBartolo, Pan, Inc. (performance: 7, cost: 9); Frank Nestor, Summit Consulting, Inc. (8,8); Jim Turner, South Coast Air Quality Management District of California (8,8).

• Product analysts: Dean Hiller (6,6); Andrew Seybold, Dataquest, Inc. (8,6); David Chernicoff, National Software Testing Labs (8,8).

• "Xtree Pro Gold may not be ideal for casual users but for heavy-duty hackers, it is the most useful DOS shell around," Seybold said.

• Financial analysis: "Xtree is very stable financially. They are profitable and have virtually no long-term debt. Relative to my client base in the same arena, they're well positioned," said Melanie Hatt, Coopers & Lybrand.

• Xtree earned revenue of \$10 million in 1990 and has sold more than 2 million copies of Xtree and Xtree Pro Gold products. In the summer of 1989, Xtree offered an amnesty program, registering users of pirated copies of Pro Gold for \$20.

# Poc-It cooks up guide for developing systems

BY RICHARD PASTORE  
CW STAFF

As information systems shops take on growing dockets of development projects, managers can find it dizzying to keep track of all the activity. For some, mission control comes in the form of the consistent methodologies and automated tracking features of on-line development aids.

Poc-It Management Services, Inc., an IS consultancy in Santa Monica, Calif., added a Systems Development Guide to its personal computer-based Microman II project management system last month. The guide,

which is packaged on floppy disks and in a 250-page bound volume, offers IS managers "a cookbook approach of how to go about developing a system," one beta-test user said.

"If you don't have a standard development method in place, everyone does it their own way," said guide beta tester Richard Smith, director of MIS for Snohomish County, Wash. This makes it twice as hard to keep track of who is doing what and how projects are progressing, he said.

While the county IS department had its own informal project methodology prior to pur-

chasing the Poc-It guide, it was not well documented, Smith said.

Now, the guide's electronic templates walk Smith and his project managers through a consistent series of development steps. The templates are divided first into five phases: planning, analysis, design, construction and implementation. These are further divided into activities and specific deliverables.

Users of Microman II, Poc-It's project-tracking software, can load the template into Microman and use that software's scheduling features to estimate the amount of time and resources to allot for a particular activity.

### Cost-justified

Smith justified the guide's \$7,500 price tag by noting that it would cost the department more

to develop and document its own methodology from scratch. And after all that work and expense, a homegrown methodology may turn out to be unworkable. "This one is well thought out," Smith said of the guide.

Smith, who has loaded the IBM-compatible software on a 3Com Corp. server and 3Plus-Open local-area network, checked out other package options, including a \$69 template from another consulting firm. "It was fairly cursory in nature," he said.

While the Poc-It package offers much more depth, "this one is not so complex that you get overwhelmed with the process," Smith said.

Although the templates offer the flexibility of customization, some users do not see themselves fitting into a development formula of any kind. "Using tem-

plates would be helpful if that was the way we did our projects, but unfortunately, it's not. Every one of our projects is so different," said Steve Stadler, microcomputer analyst at A. G. Edwards & Sons, a retail brokerage in St. Louis.

Stadler uses Poc-It's \$2,895 Microman primarily for its scheduling features. "The main intent from the package was to better inform our end-user community about what we were up to," he said. Microman's time tracking helps Stadler update users on when their needs will be met.

"That's a big factor when you're trying to make people happy or at least keep them informed," Stadler said.

Stadler and other Poc-It software users said implementing the products and training users is swift and relatively painless.







# “We needed new technology to turn our passion for customer service into results. That’s why we chose SAA.”

Jay Dinwoodie, Senior VP/Information Systems, GE Capital Fleet Services

While some companies are wondering what IBM SAA™ can do for them, the people at GE Capital Fleet Services already know.

And so do their customers.

The company is America’s leading car and truck fleet services business, and their goal is to cement that position by changing the rules, by redefining the word *service*.

SAA, or Systems Application Architecture,™ is key to that strategy.

They’ve built a complete SAA system, with a variety of applications running cooperatively on three IBM platforms: an ES/3090,™ an AS/400® and a multitude of PS/2s® using OS/2.®

## Easy to build.

According to Jay Dinwoodie, development has been quick and smooth.

“We implemented the first modules in March ’90, and since then we’ve been adding new ones like building blocks. Which is the whole idea. SAA lets us hook things together—data, image, you name it—in ways we never could before. What we’re doing here today could *never* be done the old-fashioned way.”

Jay’s users agree, especially the 45 mechanics who man the phones helping customers who have car trouble.

With SAA applications in multiple windows, they provide a level of service that’s truly unique: diagnosing the problem, finding the best nearby garage, estimating the cost, negotiating discounts, determining warranty status, scheduling preventive maintenance and more, all while keeping detailed records, in minutes, in one phone call.

To a salesman stuck on the road, that’s money in the bank. Ditto for GE Capital Fleet Services.

## Easy to learn.

Says Jay, “We bring customers in and show them what we’re doing. Nobody walks away unimpressed, and in fact, SAA’s helped us win a number of new accounts.”

Another big SAA advantage is training time, or lack of it.

“When we first got running, we went to the mechanics’ area for a training session, to get some thoughts for writing a manual. We started at one end of the room, spent a few minutes with each guy, then moved on. We weren’t half-way across the room when the first people were actually using the system, doing real work. We never did write a manual.”

## Easy to live with.

Their system is now running about 35,000 PC-host transactions a day, and Mr. Dinwoodie estimates that traditional technology would require about 250,000 transactions to accomplish the same work. He says, “Our SAA apps are just incredibly efficient, and they’ve been completely reliable.”

How strange that some people are still asking if SAA is for real.

“It’s just a question of confidence,” says Jay. “We knew exactly where we wanted to go and that ultimately SAA was the only way to get there. So we took that first step, we’ve never looked back, and expectations—both ours and our customers’—have been exceeded.”





## NEW PRODUCTS

## Peripherals

Extended Systems, Inc. has introduced two printer-sharing devices that support serial or parallel computer connections.

The Sharespool 2089 (\$945) and Multispool 2289 (\$995) enable eight computers to be connected via serial or parallel connections, depending on the type of computer application.

Both products include the company's Extendedlink technology, which reportedly provides a four-, six- or eight-wire long-line connection to a computer's parallel port.

**Extended Systems**  
6123 N. Meeker Ave.  
Boise, Idaho 83704  
(208) 322-7575

Grid Systems Corp. has announced a light pen that enables users of personal computers with IBM Video Graphics Array-compatible graphics to enter data and share applications developed for field use on a Gridpad handheld computer.

The FT-1210 and FT-1215 Light Pen packages were manufactured by FTG Data Systems. They include an interface board and a Gridpen interface software package and cost approximately \$400. Both models are now available from FTG Data Systems.

**Grid Systems**  
47211 Lakeview Blvd.  
Fremont, Calif. 94538  
(415) 656-4700

Digital Products, Inc. has introduced Printdirector Plus, an enhanced version of its Printdirector peripheral sharing package.

The product can print output from graphic programs through a laser printer at a rate of 5,000 char./sec., according to the vendor. A plug-and-print feature enables a user to share one printer among many personal computers by plugging in the appropriate cabling.

Printdirector Plus is available in six-, 10- or 16-port models, which are respectively priced at \$695, \$995 and \$1,895.

**Digital Products**  
108 Water St.

Watertown, Mass. 02172  
(617) 924-1680

Office Automation Systems, Inc.'s Laserpro LP 90/8 is a laser printer that was designed as a desktop system for performing applications such as computer-aided design or custom forms design.

The device prints on label or card stock and can process a range of paper sizes, including letter, legal and envelope, the vendor said.

The product lists at \$2,295.  
**Office Automation Systems**  
9940 Barnes Canyon Road  
San Diego, Calif. 92121  
(619) 452-9400

## Database management systems

Clarion Software, Inc. has announced Version 2 of its Graphics Language Extension Module, a product designed for its Clarion Professional Developer database program.

Version 2 enables users to graphically display, print or plot data from a Clarion database. The product allows graphics to be integrated into applications developed with the Clarion Professional Developer and features device-driver support for a wide range of manufacturers' video cards and printers.

The product is priced at \$199.  
**Clarion Software**  
150 E. Sample Road  
Pompano Beach, Fla.  
33064  
(305) 785-4555

Wordtech Systems, Inc. has announced that its Arago dbxl Ashton-Tate Corp. Dbase IV-compatible database will include a nonintrusive program test coverage analyzer.

The analyzer can be used to instantly indicate untested parts of an application that are prone to execution errors. The analyzer is controlled with two commands: one to switch coverage on or off and one to initiate reports.

The Arago dbxl was scheduled to begin

shipping last month. A package including the coverage analyzer and a source-code debugger is priced at \$495.

**Wordtech Systems**  
21 Altarinda Road  
Orinda, Calif. 94563  
(415) 254-0900

Software Products International, Inc. has introduced Version 1.1 of Access SQL, its front-end interface for Gupta Technologies, Inc.'s SQL-base.

The product includes a report writer equipped with a preview feature that enables users of database management systems to view customized reports in what-you-see-is-what-you-get formats. It is compatible with Microsoft Corp. Windows Version 3.0 and is available in single-user, network (one to four users), front-end and network expansion configurations.

Pricing ranges from \$695 to \$1,595, depending on configuration.

**Software Products International**  
10240 Sorrento Valley Road  
San Diego, Calif. 92121  
(619) 450-1526

Object Design, Inc. has introduced an objected-oriented database management system software package designed for Sun Microsystems, Inc. Sun 3 series and Sparcstation computers.

Objectstore is based on the industry-standard C++ programming language. It provides the capabilities of a production-level DBMS for managing complex objects and enables users to create distributed work group-style applications. The product runs in client/server computing environments that consist of networked workstations and high-end personal computers.

Pricing ranges from \$2,000 to \$9,000, depending on the number of users and type of site license.

**Object Design**  
1 New England Executive Park  
Burlington, Mass. 01803  
(617) 270-9797

## Data storage

Kris Technologies, Inc. has introduced a 20-MHz Intel Corp. 80386SX-based notebook computer.

A basic configuration features 1M byte of standard random-access memory, a 20M-byte internal hard drive and a 640-by 480-pixel, 16-gray-scale LCD that is compatible with IBM's Video Graphics Array.

The price for a basic configuration is \$3,899.

**Kris Technologies**  
260 E. Grand Ave.  
S. San Francisco, Calif. 94080  
(415) 875-6729

Micropolis Corp. has introduced a series of small computer system interface (SCSI) hard drives that feature access times as low as 3.9 msec.

The High Speed series includes 180M- and 385M-byte 5¼-in. half-height models, as well as 382M-, 765M- and 1.2G-byte full-height versions. The drives are compatible with IBM Personal Computer ATs, Apple Computer, Inc. Macintosh systems and Sun Microsystems, Inc. workstations.

Pricing ranges from \$1,175 for the 180M-byte drives to \$4,325 for the 1.2G-

byte models.

The company also announced two 5¼-in. SCSI Winchester disk drives. Model 1908 (\$6,995) is a 5,400-rpm device that features an unformatted storage capacity of 1.6G bytes. It is scheduled to be commercially available in second-quarter 1991.

Model 1548 (\$8,695) is a 2G-byte drive equipped with a SCSI-2 interface that yields communications rates as high as 10M byte/sec., according to the vendor. It is scheduled to be available in first-quarter 1991.

**Micropolis**  
21211 Nordhoff St.  
Chatsworth, Calif. 91311  
(818) 709-3300

## Systems

Two desktop units from Leading Edge Products, Inc. — Model D3/SX20C and Model D3/33 — are scheduled to begin shipping this month.

Model D3/SX20C is a 20-MHz Intel Corp. 80386SX-based unit with a 32K-byte cache. Model D3/33 is a high-end 33-MHz machine equipped with 4M bytes of random-access memory, a 64K-byte cache and eight expansion slots.

Pricing ranges from \$1,995 and \$2,995 for the D3/SX20C and from \$3,495 and \$4,495 for the D3/33, depending on configuration.

**Leading Edge Products**  
117 Flanders Road  
Westboro, Mass. 01581  
(508) 836-4800

## Software applications packages

Microsoft Corp. has announced The Microsoft Office for Windows, a software product that combines three business applications for the Microsoft Windows Version 3.0 graphical user environment.

The product includes Microsoft Excel for Windows, a graphical spreadsheet; Word for Windows, a Windows-based word processor; and Powerpoint for Windows, a presentation graphics program.

The Microsoft Office has an introductory price of \$995.

**Microsoft**  
One Microsoft Way  
Redmond, Wash. 98052  
(206) 882-8080

## Software Utilities

Marasys, Inc.'s Colorcube, a recently announced color graphics productivity tool, enables users of database management systems to present three-dimensional data in row or column formats using color as the third dimension.

By striking a single key, users can display numbers behind colors, and another key enables users to browse data.

The product requires an IBM Personal Computer AT, XT or compatible, MS-DOS 2.01 or higher and an IBM Color Graphics Adapter, Video Graphics Array or Enhanced Graphics Adapter color monitor.

The product is priced at \$59.95.

**Marasys**  
15425 Los Gatos Blvd.  
Los Gatos, Calif. 95032  
(408) 356-9367

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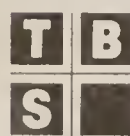
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Now, in an integrated set of solutions, local or remote Mac users in Token Ring, SDLC or coax environments can tap centralized information to make every Mac user's desktop more powerful.

MacMainFrame distributes terminal emulation, file transfer, printer emulation and mainframe

graphics across a wide variety of networking schemes.

Since it's fully AppleTalk compatible, EtherTalk, TokenTalk and LocalTalk networks are part of the solution, too.

For customization, there's Avatar's Programmer's Toolkit, a full range of Applications Programming Interface (API) tools. For example, Avatar's Hypercard API has been used to develop a front end system to PROFS, IBM's electronic mail system.

### **THE MACMAINFRAME DIFFERENCE.**

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65 South Street, Hopkinton, MA 01748



## COMMENTARY

Elisabeth Horwitt

## Dangers of complacency



Telecommunications threatens to become one more area where the U.S. had better look to its laurels if it

wants to stay competitive in the global business market. While we may gripe about our long-distance carrier's high prices or occasional network glitches, we are accustomed to taking advantage of our highly reliable, transparently transcontinental telecom services and looking down at other nations' "primitive" networks.

This type of complacency is rapidly becoming dangerous. European and Pacific Rim countries are aggressively upgrading their networks and using global networking standards such as ISDN to do so.

Japan, France and the UK are all making great strides in deploying domestic ISDN services and reaching out to other countries. In addition, organizations such as the European Economic Community are funding long-term efforts to set up pan-European broadband ISDN. And the CCITT is coming up with telecommunications standards that will ensure interoperability between different nations' services.

In contrast, the U.S. is still years away from having widely

*Continued on page 75*

## 'I'd like to charge that burger'

*Credit-card companies use networks to target cash-oriented market*

BY JOANIE M. WEXLER  
and MAURA J. HARRINGTON  
CW STAFF

"The future, my boy, is in plastics."

Some of the major credit-card companies are adding a new twist to the famous omen from the 1967 film *The Graduate*. Visa International, Inc. and Mastercard International, for example, see lucrative opportunities for plastic in the sprawling cash- and check-dominated consumer transaction markets. They hope that technology will help carry them into businesses such as fast-food chains, grocery stores, parking garages and movie theaters, where plastic is now largely a stranger.

Visa is undergoing a worldwide restructuring of its processing technology to invade these fast-paced businesses, which depend on rapid-fire network response time (see story page 76). The company's Visanet 2000 project, which involves deploying a global hierarchical "supercenter" architecture and a fiber-optic T1 backbone, is under way in anticipation of a 500% increase in transaction volume during the next 10 years, according to Roger Peirce, executive vice president of Visa International Delivery Systems.

### Wide-open market

Visa estimated that about \$3.5 trillion worth of worldwide consumer transactions take place annually. Eighty-five percent of these transactions involve cash

or personal checks as the form of payment, and 9% are on forms of plastic other than Visa cards, according to the company. Currently, about \$1.6 billion in Visanet transactions are processed each year.

Mastercard is also leveraging

running individual links to each bank. The network also automatically reroutes data to avoid service delays, according to the company.

In addition, Mastercard employs "negative file technology" for speeding up transactions. A



Cindy Charles

**Raley's CIO Donley** says customers tend to spend more when they use credit cards to pay for groceries and fast food

the high-bandwidth capacity of fiber to handle an increased transaction load. Last summer, the firm consolidated two nodes on its wide-area network — called Banknet — into a switch that routes data among member banks over a fiber backbone.

Banknet can now reportedly combine up to 24 member banks on a single circuit, rather than

cashier can scan the credit card, and a local copy of a worldwide stolen- and restricted-card database is instantly searched for a match, according to Meg Jacobson, senior vice president for U.S. merchant business at Mastercard.

If there is no match, Jacobson said, the system automatically authorizes a purchase of up to

\$25 and waives the signature rule. The credit-card companies have long been waiving the cardholder signature requirement for certain markets, such as airlines and direct marketing. The firms acknowledge that they will have to seriously consider waiving it in the other quick turn-around environments that they are hoping to infiltrate.

### Breaking tradition

Visa and Mastercard already have pilot projects under way in several industries that have been traditionally cash-oriented.

In one full-scale program, Raley's Superstore in Sacramento, Calif., has both a debit system and a credit system that accepts Mastercard or Visa, according to Chief Information Officer Joanne Donley.

A negative database system with signature waiver is in place in separate Visa and Mastercard trials at Arby's, Inc., which will roll out credit-card service in 22 cities in all its company-owned stores by the end of next year, according to Rege Braun, director of research and development operations.

Arby's uses an off-line satellite authorization system from Merchant Tech International and has determined that 2.5% of its total sales must be credit sales to offset the additional cost of accepting credit cards.

At the Houston airport, Allright Parking Texas, Inc. has been accepting Mastercard, Visa and American Express cards for 10 years. Using Celerex Corp. credit authorization terminals, which also operate on the negative database concept, "we can process a credit-card transaction in 10 or 12 seconds," said Steve Howard, Allright Parking airport

*Continued on page 76*

## LAN standard: A bridge too soon?

BY JIM NASH  
CW STAFF

Initial reaction to the trial balloon regarding an Ethernet/Token-Ring management standard, raised by 3Com Corp. and IBM, has been muted.

3Com, the leader in Ethernet local-area network adapter cards, and IBM, sovereign in Token-Ring systems, announced in July that they were working on specifications for a heterogeneous LAN management standard. The standard is intended to allow network managers to monitor and operate Ethernet and Token-Ring networks on one console.

Late last month, IBM and 3Com said they had given a pre-

liminary version of the specifications to Banyan Systems, Inc., Novell, Inc., The Santa Cruz Operation (SCO) and Microsoft Corp. for their comments. They have opened their review to any interested parties.

The proposed standard is based on the first two layers of the Open Systems Interconnect common management information protocol model. It was designed to use a limited amount of memory in order to coexist with current network software.

While some of the chosen four vendors are making noncommittal statements about the proposal, some users expressed skepticism about its relevance and chance for success.

Dick Tribble, network man-

ager at Baylor University Medical Center in Dallas, said 3Com and IBM "should learn to walk before they run" by managing different networking vendors on Ethernet first.

"The effort is honorable," Tribble said, "but why don't [they] work on the multivendor management that so many companies have babbled about before we worry about multiple networking [media] standards?"

### Creating standards

Other managers working in mixed environments are asking if just two companies can push a standard into being. 3Com and IBM may need to form a broader consortium to really light a fire, said Bill Conley, manager of in-

formation technology services at Noral Aerospace, Inc. in Newport Beach, Calif.

Conley partly discounted the clout they may have won when the Institute of Electrical and Electronics Engineers, Inc.'s (IEEE) Project 802 committee for LAN standards voted earlier this month to adopt heterogeneous LAN management as a preliminary standard. He suggested that pulling in Xerox Corp. and Digital Equipment Corp. might bring the movement to critical mass.

The vendors chosen to review the standard in September had little to say about it.

A spokesman for Westboro, Mass.-based Banyan said his firm would work with IBM and 3Com to include gateway functionality in the standard, which he said is presently oriented toward net-

work adapter cards.

Rick Thomas, manager of network management development at IBM's Research Triangle Park, N.C., facility, said gateway functionality was one of the attributes deliberately left off the first version of the proposal for the sake of simplicity.

Novell said only that the company will discuss the proposal with 3Com and IBM as it evolves. An SCO spokesman said his company had not prepared a statement on its findings. Sources at Microsoft were unavailable for comment.

There are a few companies — mostly intelligent wiring hub firms — that have announced their intention to deliver Ethernet/Token-Ring management, but their solutions require proprietary hub hardware for full functionality.



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# Fast-packet a plus for dumb terminals

BY JOANIE M. WEXLER  
CW STAFF

Dumb doesn't necessarily mean slow and inefficient.

The bandwidth-optimizing capabilities of fast-packet technology are now being applied to dumb terminals — an installed base estimated at over 17 million today and expected to reach 20 million by 1994, according to market research firm Dataquest, Inc. in San Jose, Calif.

Sync Research in Tustin, Calif., has announced that it will start shipping a network access product next month that concentrates traffic from different manufacturers' dumb terminals onto a fast-packet network via a frame-relay interface. The Frame Relay Network Access Controller is intended to speed up the wide-area network portion of direct data transfers from terminals to remote hosts.

According to Greg Toussaint, vice president of sales and mar-

**F** RAME RELAY is faster than X.25 in that it capitalizes on today's highly reliable digital circuits.

keting at Sync Research, response time delays improve from 0.5 to five seconds on an X.25 network to 50 to 100 msec on a frame-relay network. The product, he explained, is also intended to deliver the bandwidth-on-demand efficiency afforded by fast-packet technology to the terminal-user community.

The state of Florida reportedly supports about 15,000 terminals from various vendors throughout its statewide agencies. Most of the myriad terminals connect directly to a remote host, according to a spokesman at the state's communications division.

The state plans to start testing the network access controller this spring in hopes of replacing several of its \$75,000 to \$80,000 IBM 3745 front-end processors with the \$6,000 to \$15,000 Sync Research products. The controller performs the traffic management functions of an IBM front-end processor and is not limited to IBM functionality, the spokesman noted.

Frame relay is a form of fast-packet technology suited for transporting data that travels in bursts, such as terminal-to-host transaction processing applications or traffic exchanged between local-area networks. This is because frame relay ships data in variable-length packets, which is characteristic of the data in its

original form.

Like traditional X.25 packet switching, frame relay allows users to allocate bandwidth on demand to squeeze as much functionality out of their circuits as possible.

However, frame relay is faster than X.25 in that it capitalizes

on today's highly reliable digital circuits by eliminating the overhead of error checking and correction on each node.

The network access controller parallels the role of a bridge, router, terminal server or cluster controller on the customer premises side of a WAN. The

product has reportedly passed compatibility testing with Stratacom, Inc.'s fast-packet IPX T1 networking multiplexer. The specifications shared by the Sync Research and Stratacom products conform to those nailed down in September by Cisco Systems, Inc., Digital Equipment Corp., Northern Telecom, Inc. and Stratacom to tide the industry over until a final version

of the formal CCITT standard emerges.

Terminals directly attached to remote hosts — the market targeted by Sync Research's product — will continue to account for approximately 24% of the installed base of dumb terminals through at least 1992 when total installations will reach nearly 19 million, according to Dataquest.

# There Of Good Reasons These Are

ProAudit

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# Horwitt

FROM PAGE 71

available, carrier-independent nationwide ISDN services. Carriers have given the same excuses for years now: They are waiting for "stable, complete" standards that will ensure interoperability between different types of carrier switches and be-

tween the switches and customer premises equipment.

However, what has really stunted ISDN's growth in the U.S. is lack of market demand: We consider it a luxury here. After all, unlike most of the rest of the world, the U.S. already has reliable, transparently accessible transcontinental telecommunications services.

Telephone lines support

9.6K bit/sec. data transmission; for users with higher bandwidth needs, dedicated lines are available. We are even getting high-speed switched digital services now — through a wide variety of proprietary and "standard" technologies such as switched multimegabit data service, frame relay and cell relay.

In contrast, it is still difficult to make a telephone call in many

parts of the world, and many countries are just beginning to install digital networks. All this is changing rapidly, however, as 1992 approaches. Europeans recognize they must unify and enhance their communications systems if they want to compete. And the very fact that many countries are starting with primitive networks makes it easier for them to leapfrog the U.S. If

they have to do a complete revamp anyway, it isn't such a big deal for them to install the latest communications technologies, including ISDN.

By 1992, according to Gartner Group, a significant part of Europe will not only have broadly available ISDN but internationally interconnected ISDN services. Indeed, several organizations, including the European Commission and a consortium of Postal Telephone and Telegraph authorities, are said to be readying projects to implement broadband ISDN across Europe.

U.S. carriers such as AT&T now provide switched international links to ISDN services in France, Britain, Japan and elsewhere but without the full intelligence and bandwidth of a true end-to-end ISDN connection. No doubt, U.S. carriers will provide true ISDN connections with overseas carriers when the CCITT's standard is finalized. However, those links will have limited utility until we also have

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**I**F THE U.S. does not put more pressure on the communications industry to get the national ISDN house in order, we'll be second-rate citizens in a global community.

a truly end-to-end ISDN network throughout the country, instead of a hodgepodge of slightly incompatible services.

If U.S. businesses and government bodies do not put more pressure on the communications industry to get the national ISDN house in order, we'll be second-rate citizens in a global community that is tied together with standardized cost-effective digital links — supporting 64K bit/sec. now, 2M bit/sec. soon and 45M bit/sec. in the not too distant future.

Such services are becoming a top priority for businesses that are accelerating their global strategies and looking to set up new overseas plants, offices and partnerships. Such firms need to run bandwidth across borders to keep track of the latest sales figures at their outlets around the world, to ensure timely exchange of change orders and invoices with suppliers via electronic data interchange and to ensure that the latest price figures get to all their subsidiaries in a timely fashion.

Let's not let international networking be one more area where our complacency turns us into also-rans in the global market.

Horwitt is a *Computerworld* senior editor, networking.

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# Charge

CONTINUED FROM PAGE 71

manager. Howard said about 30% of his business is done by credit card.

The Celerex system transfers All-right's daily reports to a local accounting package, and the processed data is transmitted to the Houston headquarters' mainframe over telephone lines during the night using modems.

He noted that the service fees using electronic transmission of charges rather than pen and paper have caused the discounts on his receipts to fall to about 2% to 3% with Visa and to close to 4% with American Express.

The amount that a merchant loses in

credit-card service fees is a major consideration for low-margin businesses.

Credit-card company candidates such as Hardee's Food Systems, Inc., a fast-food restaurant chain in Rocky Mount, N.C., and Byerly's, a 10-store grocery chain in the Minneapolis area, said the current receipt discount structure eats up their profits. For this reason, they have elected not to implement credit-card systems just yet, although both acknowledged that, because of competition, credit cards will probably be in their future.

"We're not considering accepting credit cards at this time, though it's technically feasible," said Gerald Rowland, comptroller at Hardee's. "Our margins are 9% to 10% as it is, and simple math tells you that paying a 3% to 5% service

fee to a bank" takes a significant chunk out of the profit.

Lynn Smith, director of telecommunications at Hardee's, added that the company is developing its own terminal with a credit-card slot and restaurant information system that could also accept a debit card, such as a bank card.

"Our customers would be good candidates, but I don't see supermarkets a good place for credit cards until the discount issue gets resolved," added Tom Harberts, president of Byerly's.

## Procedures differ

"We put together certain procedures for certain types of businesses," said Jeanne Alford, director of public affairs at Visa. "For airlines and direct mail, we have an

address verification check in place to protect against fraud. We're looking at a system for checks and balances in the fast-food and grocery markets, but I can't comment yet on what that would be."

However, Donley said it is possible to offset credit-card service fees by offering higher-profit products, such as kitchen appliances and home accessories, to buyers. She said when people are buying food on credit, they are more likely to buy other items.

According to Donley, the program is too young for Raley's to provide statistics about its profitability, but she said Raley's management is "pleased" with the alternative payment program, in which 52 of the chain's 58 stores currently participate.



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# Overhaul

Visa International has determined that its anticipated 500% increase in transaction volume during the next decade will require a heavy-duty restructuring of its information technology. Enter the Visanet 2000 project, which has been under way since June.

Based on a hierarchical "supercenter" concept, primarily for improved network management and backup, the data centers will include 3090-type machines linked across the Atlantic by fiber-optic T1 circuits, according to Roger Peirce, Visa's executive vice president of delivery systems.

Visa foresees the swelling of credit-card volumes because of an effort to invade traditional cash- and check-oriented markets such as fast food. Peirce also said the melding of the European Economic Community in 1992 should help pump up credit-card use because it "throws the whole payment system up for grabs. Visa is the closest thing to a standard international currency." The supercenters are payment processing centers that serve national payments in the countries in which they are located and will back up other supercenters, according to Peirce. Four supercenters will be deployed in this decade.

At the second level of the hierarchy, interchange centers in the U.S., Canada, Asia/Pacific, Europe, Middle East, Africa and Latin America will handle regional and national processing.

Visa has committed to splitting its dedicated lines between AT&T and MCI Communications Corp. The company will reportedly use Network Equipment Technologies, Inc. T1 multiplexers.

Peirce said that previously Visa "had never formalized the data flow" and that the peer-to-peer nature of its processing centers "wasn't manageable" enough to handle the anticipated increased traffic down the road.

Visanet 2000 will cost approximately \$150 million, Peirce said, and should have a 10-to-1 payback over seven years.

JOANIE M. WEXLER



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Hewlett-Packard Co. has introduced HP Probeview 3.0, a software package designed for use with the HP 4990S Lanprobe network analysis system.

HP Lanprobe comprises an HP 4991A Lanprobe segment monitor (\$4,470 to \$4,995), HP 4990A Probeview software (\$5,000) and an optional HP 4992A Node Locator (\$975).

HP Probeview 3.0 includes an embedded database that can be used to organize data according

to node, segment and network. An HP 4993A Probeview console equipped with an HP Vectra QS/20 personal computer configured with HP Probeview 3.0 is priced at \$12,750.

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David Systems, Inc. has intro-

duced an in-band communications module (ICM) designed for its five- and 12-slot intelligent concentrators.

The Supervisor ICM establishes a communications function between the concentrator and a control workstation for a network management system and provides in-band signaling via an Ethernet network. Firmware on the concentrator's Supervisor

module includes Simple Network Management Protocol (SNMP) compatibility, and when joined with an ICM, complete SNMP management connectivity is provided, the vendor said.

The product costs \$795.  
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Rainbow Technologies Inc. has introduced a site license management system designed to let network managers control the number of concurrent users of an application software program running on a local-area network.

Netsentinel can be operated only with a hardware key. It tracks how many users are simultaneously accessing a software application and bars additional users from accessing the same program when the limits of a site agreement have been met.

Pricing ranges from \$49 to \$299 per system, depending on quantity and type of hardware key model purchased.

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Irvine, Calif. 92718  
(714) 454-2100

Local-area networking software

Aim Systems, Inc. has announced an optical-based information and image management software product that uses Microsoft Corp.'s Windows as an application interface.

Target is a set of modules that support document scanning, work-flow or document routing and facsimile I/O. It also includes modules that download main-frame-generated documents and provide software emulation for IBM 3270, Digital Equipment Corp. VT-100 and VT-200 and asynchronous terminals.

Pricing ranges from \$2,500 to \$29,000.

**Aim Systems**  
1130-D Burnett Ave.  
Concord, Calif. 94520  
(415) 682-7922

Links

Control Corp. has introduced a 100M bit/sec. controller that was designed for Unix multiuser graphics systems.

Multivision enables users to connect as many as 16 graphics stations to an Intel Corp. 80386- or I486-based IBM Personal Computer AT-compatible system. It runs under The Santa Cruz Operation's Xenix or Unix and AT&T's Unix System V.

A Multivision host controller costs \$995, and a system that can connect four graphics stations at a distance of up to 225 feet from a host costs \$3,742.

**Control**  
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St. Paul, Minn. 55164  
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	CA-DATACOM		✓
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	MVS/XA	✓	✓
	MVS/ESA	✓	✓
	VSE		✓
	VM		✓
	PC-DOS		✓
STANDARDS	PC LAN		✓
	ANSI SQL	✓	✓
	FIPS	✓	✓
	SAA	✓	✓
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## EXECUTIVE TRACK



**Larry L. Betsinger** has been promoted to executive vice president and director of corporate information services at **UJB Financial Corp.** in Princeton, N.J.

Betsinger joined UJB in December 1989 as a senior vice president. He is responsible for corporatewide computer operations, systems and programming and telecommunications at the \$13.6 billion financial services firm.

Before joining UJB, Betsinger was a senior vice president and chief information officer at Meritor Financial Corp. in Philadelphia, which outsourced its information systems function to Electronic Data Systems Corp. in 1989. Prior to that position, he was president and chief executive officer of First City Services Co., the IS subsidiary of First City Bancorp in Houston.

Betsinger attended Drake University and completed requirements for a degree from the University of Wisconsin Graduate School of Banking.



**Alexander Ferraiuola** has been named assistant vice president and director of the University Computer Center at **New York University**.

Ferraiuola, 43, was most recently director of MIS at the Reserve Fund. Before that, he was director of international IS at Schering-Plough, Inc., holding positions in the U.S. and Europe.

**Stephen A. Little** was promoted to vice president of corporate IS at **Square D Co.**, a manufacturer of industrial control and electrical distribution products in Palatine, Ill.

Little had been Square D's director of IS since joining the company in 1989. In his new position, he has overall responsibility for the planning, design and implementation of the company's IS worldwide.

Little holds a bachelor's degree in industrial management from Purdue University and an MBA from the University of Chicago.

## A taste for IS and an ancient art

*Mondavi's Graham crafts systems with respect for wine-making tradition*

BY JAMES DALY  
CW STAFF

**A**n empty oak barrel rolls into position, a pungent and fruity smell emanating from its cabernet-stained inner walls. An apron-wrapped worker nimbly inserts a hose into the cask and fills it with the juice of plump grapes plucked from the nearby Napa Valley hills. The barrel is later moved into a cellar, where it will languish for a year or more while the French oak helps transform the rough palate of the juice into a full and subtle wine.

"Wine making is a very old and ancient art, and I have to respect that," says Ken Graham, director of MIS at the Robert Mondavi Winery, while observing the centuries-old process. "There's not too much a computer can do to change that."

What has changed, however, is that the wine-making industry has become a fiercely competitive business where such modern concerns as marketing, sales and distribution efficiency can make or break a vintner. When Graham joined Oakville, Calif.-based Mondavi as information systems head two years ago, he was faced with the challenge of establishing a technology infrastructure that could apply the sophisticated tools of the Silicon Age to an industry that has remained essentially unchanged since biblical times.

Lured from early retirement by both technological advances and the chance to move to an area he loves, Graham, 59, knew he had his work cut out for him. When vintners lovingly describe the soft romance of "the brotherhood of wine making," they tacitly refer to an emotional domain where technology dares not trample.

### PROFILE: Ken Graham



Andy Freeberg

**Position:** Director of MIS, Robert Mondavi Winery

**Mission:** Applying technology to marketing, distribution and other business areas while appreciating the subtle art of wine making

"My first important step was to make top management realize how important IS can be to the company," Graham says. "In the wine-making business, MIS is clearly not the driving factor in making you a success, but we play a very key role."

Co-workers say that when Graham arrived, the IS infrastructure of the winery had slipped and was not flexible enough to handle Mondavi's 10% to

15% annual growth rate. "We needed to start all over in some areas," says Caroline Csavas, marketing manager at Mondavi's Woodbridge, Calif., sales office. "We knew what we wanted in the areas of computers but were totally unable to get our arms around the problem. Ken figured out what we needed and was instrumental in selling those ideas to management."

*Continued on page 82*

## The high cost of the lowly business letter

BY MITCH BETTS  
CW STAFF

**T**he cost of a secretary-produced, one-page business letter shot up 79% during the last decade, despite the increasing use of personal computers by secretaries, according to Dartnell Corp., a business information publisher based in Chicago.

The cost hike was driven mostly by the increasing salaries of secretaries and their bosses in the 1980s, which tracked the economy's inflation rate, according to Dartnell Senior Editor Bob Minor.

Meanwhile, there is no hard evidence that PCs — compared with modern electronic typewriters — boost secretarial productivity for one-page missives, he said.

"There is no cost-saving visible

when a computer is used on a short business letter, but that picture can change" for complex, multipage documents such as bids, quotes, reports and legal filings, Dartnell reported.

The cost of a one-page business letter resulting from face-to-face dictation rose 6% to \$10.85 in 1990, according to the study. (If the boss uses a dictation machine, the cost is 22% less, or \$8.41, because the secretary does not have to spend 10 minutes taking dictation.)

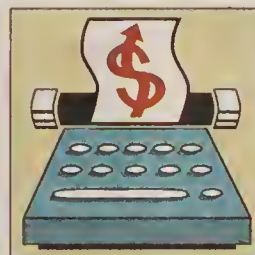
However, Minor acknowledged that the methodology of the long-running study, which focuses on letters produced by secretaries, is becoming outdated because of advances in technology and the likelihood that many managers write their own business let-

ters on PCs.

The cost of the standard business letter has been rising steadily for decades, from 30 cents in 1930 to \$1.83 in 1960, \$3.05 in 1970 and \$6.07 in 1980, the study said. Last year, the cost exceeded \$10 for the first time.

The study considers the standard business letter to be about 180 words. The cost calculation includes the salaries of the boss and secretary for the 18 minutes needed to produce the letter, as well as the costs of overhead, supplies and first-class postage.

Dartnell noted that there is currently a strong demand for secretaries with computer skills, while less than 10% of the 300 companies surveyed are asking for shorthand skills.





## Ancient art

FROM PAGE 81

Graham discovered that the old information system primarily handled accounting chores and was sorely in need of an upgrade if Mondavi was going to turn computer technology into competitive advantage. His first goal was to expand communications links between the winery's several vineyards and keep a closer tab on the status of 10.3 million gallons of wine stored in nearly 150 storage tanks and 13,000 aging barrels.

By meeting with top managers as well as lower-level employees, Graham was able to discuss the function and problems of each department and pinpoint areas where IS could contribute to Mondavi's \$120 million business.

"Ken believes that there really are intelligent people at the other end of that computer," says accounting manager Nancy Sellers. "His perspective enabled us to do a more thorough job in the selection and implementation of our new core systems."

When walking through the Mondavi winery, it is difficult to discover anything more technologically sophisticated than the

Nintendo games children fiddle with while their parents sip chardonnay. Yet, it's all there.

Employing an annual budget of \$1.5 million, Graham has nimbly crafted an arrangement that is as subtle and complex as a fine zinfandel.

His first step was to install an IBM Application System/400 minicomputer running a variety of off-the-shelf and homegrown software.

### Keeping tabs

An elaborate local-area network using hundreds of terminals and IBM Personal Computer clones was developed to hook up the central sales offices with a nearby distribution center that handles the 2 million to 3 million cases of wine that Mondavi ships each year.

"We wanted to keep as close an eye as possible on our bulk wine processing so we could tie it in with the orders coming in," Graham says.

It's hardly the type of arrangement one would expect from a man who retired from the IS profession in 1987 with only one idea burning in his head. "I wanted to get as far away from computers as possible," he says.

Graham began his long career in IS when he joined The Boeing Co. in 1955 as a systems analyst.

He spent nine years there, working on the production of the original 707 and 727 jet airliners. His last project was as the senior production control supervisor of the building of a new Air Force One for President John F. Kennedy, the same aircraft that brought Kennedy's body back from Dallas after his assassination in 1963.

Following his stint at Boeing, Graham spent 23 years in the IS sector at the Gallo winery in nearby Modesto, Calif., supporting Gallo's growth from a \$100 million business to a \$1 billion wine-making giant. Although he worked on some exciting projects there, such as beta-testing some of the world's first CICS Cobol applications, he says Gallo was often a "furiously hectic place. I grew tired of the pressure," he says.

He retired to go into business for himself, starting a small financial services firm. But then something happened that proved that, even after declaring himself officially retired, he could take the man out of IS but couldn't take the IS out of the man: IBM introduced the AS/400 in 1988.

"I suddenly saw this as a very interesting computer with a tremendous amount of potential," he says. "I was anxious to get my

hands on it."

Next on Graham's Mondavi agenda is a project that will completely revamp the winery's central database and offer the field sales force the ability to dial in for up-to-date information. Graham says he has actively solicited suggestions from sales representatives so they can feel a sense of ownership in the system.

tem.

Although he is trying to implement some very fundamental changes, Graham realizes that he must gingerly toe the fine line between the past and the future. "Ultimately, the final arbiters of wine making are the sense of taste and the sense of smell," he says. "We're here to make sure that comes off without a hitch."

## U.S. hiring to drop in '91

BY CLINTON WILDER  
CW STAFF

MILWAUKEE — Further proof that there is a U.S. recession came out last week when Manpower, Inc. reported that more U.S. companies plan to cut employees than hire new workers in the first quarter of 1991.

The quarterly survey of more than 15,000 firms found that 16% intend to reduce their work force in the first quarter, compared with 15% that plan to increase hiring. Two-thirds of the companies said they plan no changes in employment levels during the quarter.

The net hiring drop of 1% is the first negative hiring factor shown by the survey since the first quarter of 1983, when an

equivalent hiring pattern reflected the lingering effects of the 1982 recession.

By contrast, in the first quarter of 1990, 20% said they planned to increase hiring while only 12% intended to cut back. For the current fourth quarter, 23% intended to hire more workers while 11% planned to have work-force reductions.

Not surprisingly, the wholesale and retail trade industry will be especially hard hit, with 24% planning cuts and only 12% adding new employees. The construction industry had the most pessimistic outlook, with 27% cutting back and only 10% hiring. The services sector will fare among the best, with 19% of services firms hiring and 10% cutting back.

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## CLIPS



Tim Lewis

Summaries from leading scientific and management journals

### "The new industrial engineering: Information technology and business process redesign"

By Thomas Davenport and James Short

MIT Center for Information Systems Research  
Working paper, June 1990

■ For firms that want to take advantage of information technology to change the way they operate, there is a five-stage model for redesigning the business:

- *Develop business vision and process objectives rather than eliminate inefficiencies.* Most successful redesign efforts start with management developing a broad strategic vision. One possible approach is reducing time by reorganizing sequential tasks to run in parallel.
- *Identify processes to be redesigned.* A practical strategy is to focus on fixing the processes that have the greatest impact on the business rather than trying to remake the whole organization.
- *Understand and measure existing processes.* This way, you know what is wrong and can measure improvements.
- *Identify information technology leverage early in the process instead of at the end.* Technology excels at improving coordination, information access and analysis. It can also be applied to intra- and interorganizational tasks such as ordering from suppliers, filling customer orders and developing budgets.
- *Design and prototype the process.* Redesigning is iterative, but a new process should be tested and refined before being locked in. Technologies such as computer-aided software engineering can help. — Paul Gillin

### "Hypertext: The smart tool for information overload"

By Robert Haavind

Technology Review  
November-December 1990

■ The Information Age has resulted in a deluge of data, bringing with it not only unparalleled access to data but also sensory overload. Hypertext, a method of organizing and interlinking computer information, is a smart bet to plug that dike.

Hypertext, which was first conceived in the early 1960s, presents information in a format that lets a user jump easily from subject to subject; sideways, as opposed to the more conventional hierarchical database. Screenfuls of data are stored as "nodes," and related information from a linked node can be easily accessed.

Hypertext serves businesses by providing shortcuts to information that might otherwise get buried in bulky hard-copy reports.

Hypertext has tremendous potential in several areas. The education arena can benefit from hypertext's free-ranging abilities. A student can start out learning about cotton planting in Georgia and segue to studying the life of Thomas Edison.

Groupware can also exploit hypertext's abilities. Using it, project teams that are geographically isolated can exchange linked information. The use of built-in intelligence in some systems makes the systems even simpler to use.

The growing use of hypertext in groupware is raising compatibility issues, however. Proprietary architectures and

software may cause problems as people increasingly try to share information across different systems. The problem of attribution could also arise as increasing amounts of people access linked data pools. — Carol Hildebrand

### "Investigating the support role of the information center"

By Francois Bergeron,  
Suzanne Rivard and Lyne De Serre

MIS Quarterly  
September 1990

■ End-user computing requires an investment in providing those users with technical support. Otherwise, inexperienced

users can spend a great deal of unproductive time on the computer.

But what makes an effective support organization? A study of the information centers at 19 corporations in Eastern Canada provided several clues:

- The information center should be located close to users, even if that means dispersed centers. Users want fast answers and face-to-face help.
- The best results are achieved with a small but competent support staff.
- The support center should focus on supporting a limited number of software packages and corporate databases. Apparently, spreading the efforts of the support staff over too many products runs the risk of supporting none of them very well. — Mitch Betts

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# 1991 Editorial Calendar

## (January-June)

Executive Reports	Issue Date	Ad Closings	
		Color	B/W
Maximizing the I/S Investment: Laying the Groundwork for New Architectures	Jan. 7	Dec. 20	Dec. 28
Taming the Unmanageable Network	Jan. 21	Jan. 4	Jan. 11
How I/S and Individual Business Units are Negotiating Project Priorities	Feb. 18	Feb. 1	Feb. 8
How Large Companies are Creating Data Standardization	Mar. 4	Feb. 15	Feb. 22
Maximizing the I/S Investment: Evaluating Advanced Technologies	Mar. 18	Mar. 1	Mar. 8
The I/S Role in Workforce Education	Apr. 15	Mar. 29	Apr. 5
View from the Top: How CEOs and CFOs Evaluate I/S	Apr. 29	Apr. 12	Apr. 19
Maximizing the I/S Investment: Data Center Efficiency	May 13	Apr. 26	May 3
Striking the Right Balance Between Centralization and Decentralization	June 17	May 31	June 7
Product Spotlights/Buyers' Scorecards			
High-end Modems	Jan. 14	Dec. 28	Jan. 4
Network Connectors - Gateways, Bridges and Routers ( <i>Featuring Buyers' Scorecard</i> )	Jan. 28	Jan. 11	Jan. 18
Systems for Flexible Manufacturing	Feb. 11	Jan. 25	Feb. 1
Relational Databases ( <i>Featuring Buyers' Scorecard</i> )	Feb. 25	Feb. 8	Feb. 15
Project Management Software	Mar. 11	Feb. 22	Mar. 1
Software Maintenance Tools ( <i>Featuring Buyers' Scorecard</i> )	Mar. 25	Mar. 8	Mar. 15
Sales Force Automation	Apr. 8	Mar. 22	Mar. 29
CASE Tools ( <i>Featuring Buyers' Scorecard</i> )	Apr. 22	Apr. 5	Apr. 12
LAN Servers	May 6	Apr. 19	Apr. 26
Network Management ( <i>Featuring Buyers' Scorecard</i> )	May 27	May 10	May 17
Minicomputers	June 10	May 24	May 31
Portables and Laptops ( <i>Featuring Buyers' Scorecard</i> )	June 24	June 7	June 14
Integration Strategies			
Using Commercial Systems Integrators	Feb. 4	Jan. 18	Jan. 25
How Companies are Effectively Incorporating LANs into the Integration Strategy	Apr. 1	Mar. 15	Mar. 22
Strategic Integration of Databases	June 3	May 17	May 24
Industry Closeups			
Industry Closeup: Information Systems in Medical Care	Feb. 4	Jan. 18	Jan. 25
Industry Closeup: Information Systems in Transportation	Apr. 1	Mar. 15	Mar. 22
Industry Closeup: Information Systems in Energy Production	June 3	May 17	May 24
Special Reports			
Special Report: Advances on the PC Front	May 20	May 3	May 10



## CALENDAR

A second conference on outsourcing will be sponsored by Boston-based The Yankee Group. "Outsourcing: Options & Tactics" will be held Jan. 29-30 in Orlando, Fla.

The agenda features users Bob Temple of First City Bancorp, George DiNardo of Mellon Bank and John Hammitt of United Technologies. IBM general manager Bill Wilson will discuss IBM's newly formed Systems Services Division, devoted to outsourcing services.

For more information or registration, contact: The Yankee Group, Boston, Mass. (617) 367-1000.

## JAN. 6 - 12

**Do Voice Systems Really Work?** New York, Jan. 7-8 — Contact: Media Dimensions, New York, N.Y. (212) 533-7481.

**Macworld International Summit.** San Francisco, Jan. 7-8 — Contact: Susan Carroll, Macworld Communications, Inc., San Francisco, Calif. (415) 978-3392.

**International Security Conference and Exposition West '91.** Anaheim, Calif., Jan. 9-11 — Contact: Cahners Exposition Group,

Des Plaines, Ill. (708) 299-9311.

## JAN. 13 - 19

**ICA Winter Seminar.** Houston, Jan. 13-16 — Contact: International Communications Association, Dallas, Texas (214) 233-3889.

**Pacific Telecommunications Conference: Accessing the Global Network.** Honolulu, Jan. 13-16 — Contact: PTC, Honolulu, Hawaii (808) 941-3789.

**National Retail Federation Retail In-**

**dustry Convention and Exposition.** New York, Jan. 13-16 — Contact: NRF Convention Registrar, New York, N.Y. (212) 563-5113.

**Technical Conference on the X Window System.** Boston, Jan. 14-16 — Contact: MIT Laboratory for Computer Science, Cambridge, Mass. (617) 253-8861.

**Computer Graphics Show.** New York, Jan. 15-17 — Contact: Computer Graphics Show, Silver Spring, Md. (301) 587-4545.

**Service and Quality: Tactical Deployment.** St. Louis, Jan. 17-18 — Contact: Bonnie Sen, Washington University, St. Louis, Mo. (314) 889-5380.

**Landex '91.** Irvine, Calif., Jan. 17-19 — Contact: Landa, Elmhurst, Ill. (708) 863-3111.

## JAN. 20 - 26

**Data Visions '91.** San Francisco, Jan. 20-23 — Contact: Earle Speranza, Wordtech Systems, Orinda, Calif. (415) 254-0900.

**The Downsizing Conference.** San Francisco, Jan. 21-22 — Contact: Digital Consulting, Andover, Mass. (508) 470-3880.

**Unix Technical Conference.** Dallas, Jan. 21-25 — Contact: Usenix Conference Office, El Toro, Calif. (714) 588-8649.

**infotext '91.** Las Vegas, Jan. 22-23 — Contact: Bob Dale, Infotext Publishing, Capistrano Beach, Calif. (714) 493-2434.

**Uniforum 1991.** Dallas, Jan. 22-24 — Contact: Bob Linke, PEMCO, Des Plaines, Ill. (708) 299-3131.

## JAN. 27 - FEB. 2

**Communication Networks '91 Conference and Exposition.** Washington, D.C., Jan. 28-31 — Contact: Michael Sullivan, World Expo Corp., Framingham, Mass. (508) 820-8268.

**Network Computing Forum and Exposition.** Washington, D.C., Jan. 29-31 — Contact: Christine Krajewski, World Expo Corp., Framingham, Mass. (508) 820-8126.

## FEB. 3 - 9

**Mocapp Conference.** Phoenix, Feb. 4-8 — Contact: Macapp Developers Association, Everett, Wash. (206) 252-6946.

**Mocintosh/N.Y. '91.** New York, Feb. 5-7 — Contact: Peter Kimpton, Exposition Management, Waltham, Mass. (617) 290-0412.

**Florida Educational Technology Conference.** Tampa, Fla., Feb. 5-8 — Contact: Barbara Ann Cox, Office of Educational Technology, Tallahassee, Fla. (904) 488-0980.

**NOMDA West Regional Convention.** San Diego, Feb. 7-9 — Contact: Katy Dunn, NOMDA, Kansas City, Mo. (816) 941-3100.

## FEB. 10 - 16

**The Development Center Institute Conference.** Orlando, Fla., Feb. 10-13 — Contact: Development Center Institute, Indianapolis, Ind. (317) 846-2753.

**Video Expo.** San Francisco, Feb. 11-15 — Contact: Debbie Rotolo, Knowledge Industry Publications, White Plains, N.Y. (914) 328-9157.

## FEB. 17 - 23

**SAS Users Group International Conference.** New Orleans, Feb. 17-20 — Contact: SUGI Registration, SAS Institute, Cary, N.C. (919) 677-8000.

**Northwest Computer Show.** Minneapolis, Feb. 19-20 — Contact: Judy Koch, Plymouth, Minn. (612) 420-5376.

**Trax User Group Conference.** Long Beach, Calif., Feb. 19-22 — Contact: Anne Sifferman or F. Thomas Cox, Trax Software, Culver City, Calif. (213) 649-5800.

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# EXECUTIVE REPORT

WHEN IS MOVES INTO DEPARTMENTS

## Systems transplants thrive in business settings

BY ALICE LAPLANTE

**T**od Fanning says he feels as if he's made it into prime time. A former programmer/analyst at Baxter International, Inc.'s central information systems department, Fanning now functions as a manager of national accounts at Baxter's IV System Division. This position uses Fanning's systems background but puts him in the middle of what he regards as the real action: selling Baxter health care products to corporate customers.

"I always wanted to do more than just work within information resources. I didn't want to be pigeonholed," says Fanning, who joined Baxter right out of college with a bachelor's degree in mathematics. "I saw the salesmen making a lot of money and getting out in front of people. They had more prestige and were regarded as higher up than typical systems workers."

### Close encounters

Close contact with the mainstream of business activity is becoming a more common experience for IS professionals in many U.S. corporations. Decentralization of certain IS functions — for example, applications development — is coming to be seen as a productive way to tailor applications more closely to a core business unit.

"Corporations want a deeper sense of profit-and-loss accountability from their separate business units," says Jim Webber, president of Omicron, a consortium of 60 major U.S. corporations formed to help members effectively apply computer technology. "Moving a systems team out to a division or subdivision is one way to accomplish this."

At Royal Bank of Canada in Toronto, the practice of putting systems people into business units — or putting business users into the IS community — is called "co-locating." Although it has been going on informally at Royal Bank for 15 years, it has



Michael L. Abramson

**Baxter's Fanning:** *'I always wanted to do more than just work within information resources. I didn't want to be pigeonholed'*

only been during the past three years that co-locating has been recognized as a legitimate way of developing strategic information products and services.

The bank has appointed an official coordinator for such efforts — Ted Carrett, manager of consulting services for systems and technology. According to Carrett, recent co-location efforts involving large-scale movements of staffs have proved so successful that they are likely to become common. "We've found that it cements the partnership between the business unit and the systems staff," he says.

At Valspar Corp., a Minneapolis-based manufacturer of paints and coatings with \$600 million in annual sales, mixing IS professionals into business departments is an idea that has

long been considered but only recently implemented. One person has already made the transition, and another is getting ready to make her move.

Baxter began the process of "seeding" business areas with technical personnel in 1987, starting with its Scientific Products Division located in McGaw Park, Ill., where a relatively small core IS staff — 20 employees total — was struggling with the responsibility for coordinating a complex mix of corporate, divisional and local departmental systems.

The only way to effectively accomplish this, according to Larry Levin, the division's IS director, was to recruit systems experts who would operate within end-user departments and help resolve problems or con-

flicts at the local level.

Sometimes these departmental systems experts come from the business community: people who have an aptitude for technical matters and are trained by the IS department. Sometimes they are IS employees from the corporate staff, anxious to broaden their horizons.

### Not just computer jocks

Fanning was one of those who co-located. Starting in 1988, he spent two years in the Scientific Products Division's national accounts department developing a reporting system for corporate sales accounts. He got there, he says, by taking advantage of a Baxter policy that allows any employee to nominate himself for a job opening listed on a corporatewide job board.

"I saw an opening listed in [the Scientific Products Division] for a senior consultant, and the job description sounded to me like I could move around and get some business experience," Fanning says. The strategy worked. Last month, Fanning was offered a chance to move into his current slot in the IV System Division, reporting to the vice president of national accounts in Los Angeles.

Fanning says his current job, which involves designing better ways of communicating with Baxter's national accounts, draws on both his systems background and the business experience he picked up at the Scientific Products Division as a senior programmer/analyst.

"I'm responsible for managing the relationships and getting these accounts the right information about Baxter products as well as their own account histories," Fanning says. "My IS background helps me know what information is in the Baxter system, where it is probably located and how I can get access to it."

What his stint in the Scientific Products Division gave him, he says, was an awareness of how time is measured in the business world.

"In IS, you are not directly in  
*Continued on page 88*

### INSIDE

#### The pendulum swings two ways

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#### The business manager's perspective

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LaPlante is a free-lance writer based in Palo Alto, Calif.



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contact with customers, so you don't feel the urgency that salespeople feel," Fanning says. "You put in your time, and if you are meeting your deadlines, you don't need to kill yourself. Or, if you get unreasonable demands from users, you can just say no. But there is no way you can have this kind of attitude with an outside customer."

These days, Fanning's primary identification is with the business. He is currently working toward an MBA and takes considerable pride in the fact that business managers no longer regard him as "just Tod, the computer jock."

"I feel like I am earning the respect of the regional sales managers, that they don't just think of me as a techie who can help them out of a jam but rather as someone who is more on the ball," he says.

Still, old identifications and old habits can be hard to shake. "People come to me with their systems questions, even if it's not in my area of expertise," he says. "They assume because something has to do with computers, I must understand it."

Furthermore, Fanning says, it's sometimes hard to resist the urge to roll up his sleeves and

jump back into coding.

"I often find it hard to step away from the systems stuff. When some programming needs to be done, I know that if I just did it myself, I could get it done more quickly than if I delegated it," Fanning says.

Steve Miller has also discovered that old patterns persist, even when jobs change. Miller, who manages electronic data interchange (EDI) implementation

at Baxter's Scientific Products Division, says that, like Fanning, he is always being asked by users in his department to act as an informal liaison with the systems staff. "A good portion of my time is spent

serving as the department computer jock," Miller says.

Still, Miller, who has both undergraduate and graduate computer science degrees and is halfway through an MBA program, says making the move from central IS to working directly with division sales and marketing personnel was a step in the right direction.

"You can work for years and years in information resources and have virtually no contact with the people responsible for using the system," Miller says.

As a result, he says, when a three-year stint developing Baxter's proprietary EDI sys-

tem led to the offer of his current job, the idea of working with users sounded exciting.

In fact, Miller says, the biggest challenges in his current position don't involve technology but rather "talking to Baxter's customers about how they would prefer to do business using this technology" and convincing them to discuss the details of their EDI systems with an outsider.

#### Early hours

Setting his alarm clock to get up earlier is just one of the adjustments Tom Wondra has had to make since transferring from the central IS department at Valspar's Minneapolis headquarters to the company's Chicago-based Consumer Paints Division.

Wondra, who interned at Valspar as a computer science student and then accepted his first job out of school as a programmer at the headquarters of the paint and coatings manufacturer, now answers to the title of manager of scheduling.

Working in that capacity at a manufacturing plant means early hours, Wondra says. "The guys in the warehouse start work at 4 a.m., and manufacturing operations run around the clock," he says. "If I get here at 9 a.m., I have dozens of fires to put out, and the morning can get off to a crazy start."

Work pacing has been an even bigger adjustment, according to Wondra. "At corporate [head-

quarters], I was working on two- to three-year projects. The emphasis was very long term," he says. "This is more of a day-to-day job."

Wondra likes the quickened pace. He also likes the camaraderie of his new setting. Unlike at corporate headquarters, where everyone is rushing in different directions, here the entire department is highly focused on a common goal. "It's one for all

The post Wondra accepted last February — for which he moved his family to the Chicago area — involves scheduling the manufacturing plant's resources.

Part of his job still involves programming. A current project is a personal computer-based scheduling and forecasting application.

There are times, Wondra says, when he does experience

**D**ECENTRALIZATION OF certain IS functions — for example, applications development — is coming to be seen as a productive way to tailor applications more closely to a core business unit.

and all for one," he says.

In fact, when it comes right down to it, Wondra likes just about everything about what he is doing now better than the life of a programmer. "As soon as I was hired, I knew I liked the business side of what I was doing better than the programming [side]," he says.

There was plenty of time for comparison. After Valspar acquired the company that was to turn into its Consumer Paint Division in 1987, Wondra became a sort of part-time fixture at the plant where he now works, shuttling back and forth between Minneapolis and Chicago to handle development tasks.

divided loyalties — particularly when he hears end users complaining about the systems department. "People in the field say that they never get what they want and that the whole system is backlogged," he says. "Of course, I know what causes these things from a systems point of view, but now, for the first time, I know how users feel."

That's a difficult leap to make, he says, for a full-time IS employee stationed hundreds of miles away. "When you are sitting at a desk in Minneapolis, you know very little about making plans."

Although he's now close

## Maintaining career course outside corporate IS

**W**hen corporate information systems employees jump — or are pushed — from the corporate IS mother ship to work in business departments, they frequently experience at least a few twinges of career anxiety.

Fortunately, many organizations pursuing relocation strategies realize this and have put some structures in place to ensure that remote IS employees are not dead-ended in terms of further advancement within the company — whether they choose to go back to IS or continue working in a business capacity.

"One of the things my people worried about when they began this project in the Treasury Department is that they would lose their connection to MIS," says John Reitsma, manager of investment banking and treasury technologies at Royal Bank of Canada in Toronto. Reitsma oversees a group of IS employees located away from the IS home base for extended periods of time. "But we have worked hard to make sure that they are still included in MIS functions and that their career options will not be limited to the department they are working in today."

Ted Carrett, manager of consulting services at the bank, says, "Systems people need to feel that they are being

nurtured and that we will ensure their future well-being. So even if they report to a business unit, we make sure there is a 'dotted line' connecting them back to MIS."

IS managers say this can be accomplished in several ways. First, keeping remote personnel on the IS electronic mail list goes a long way toward making them feel involved. Communication shouldn't just be limited to business, IS managers say. Remote employees should also be informed of birthdays, departmental lunches, family picnics and other activities in which the IS staff participates.

Second, voice mail can help, they say. Being able to leave a detailed, private message rather than just a name and telephone number with a secretary or message center keeps up the sense of personal contact that some remote employees miss.

Bob Simonson, director of business computer systems at Eastman Kodak Co.'s Clinical Products Division, says the company works hard to encourage social connections and career paths between remote IS departments and the central staff (see story page 90). "We have a very sophisticated framework of making sure MIS personnel information

gets distributed to the right people," he says. There is a comprehensive job posting system as well as career counseling, training and education classes that all work to provide Kodak IS employees with career options, he says.

Enormous strides have been made since the early days of remote data centers, says Simonson, who learned a lot about working in a remote business unit from a stint in a previous Kodak IS job at Eastman Savings & Loan, a New York chartered savings and loan serving Kodak employees. He was MIS manager there at a time when there were no clear paths between Eastman Savings & Loan and the central Kodak IS organization — something he took care to change.

When he was at Eastman Savings & Loan, Simonson says, the job posting system didn't exist, and he had to rely on a device of his own, which was to send every programmer or analyst he was considering as a hire for an interview with the central IS group. That way, he says, he could make sure each person hired by him was considered suitable and would therefore have a growth path at Kodak ahead of him.

Not all paths from remote IS postings

lead back to the central staff. Some technical employees who are moved into business areas discover career interests outside the systems area.

Tom Wondra, a former programmer at Valspar Corp., a paint and coatings manufacturer in Minneapolis, says he thinks he will eventually leave the systems arena in order to advance within his department's business function.

"I want to give it a try," he says. "I'm not saying I'll never go back to MIS, but I haven't seen a lot of MIS folks getting into senior corporate management."

Tod Fanning, manager of national accounts at Baxter International, Inc.'s IV System Division, is also looking ahead to more business-oriented roles. "I think I'd like trying to be a sales manager eventually," he says. "I like getting out in front of customers."

Once they have found their footing in their new situations, many departmentally based systems personnel gain confidence in the value of their new and broader experiences.

Steve Miller, manager of electronic data interchange implementation at Baxter's Scientific Products Division, is one of that group. "If I were to go back to information resources, it would be at the management level. I've learned a lot being in the user community."

ALICE LAPLANTE





enough to smell the paint fumes and reports not to IS but to the production control manager for latex production, Wondra hasn't totally given up his commuting habit or his ties to IS. He still makes frequent trips to Minneapolis in order to talk to the IS director and Valspar's recognized PC guru. "There's a lot of experience up there I can draw on," he says.

Wondra's situation is the first of its kind at Valspar, but it isn't likely to be the last. In fact, he says, another IS employee in Minneapolis is currently being groomed for transfer into a business unit. "Valspar has been thinking about doing this for a long time," he says. "In fact, when I was first hired, I was asked if I would be interested in being eventually moved out to a business group."

Now that he's had a chance to sample life outside IS, Wondra says, there's "a good chance" that his career will move further away from that specialty and closer to the business of manufacturing paint. "At this stage of the game, I'm willing to give that a try," he says. "I've got certain aspirations for upper management."

#### A little of each

John Reitsma resists the idea that it's necessary to make a choice between systems and business. His current title is manager of investment banking and treasury technology at Royal Bank of Canada, and he

presently hangs his hat in the Treasury Division, which is about one mile away from the building that houses the bulk of the bank's IS staff.

Still, Reitsma doesn't think of himself as belonging in either a business or an IS box. "I've had a lot of different masters here at the bank, and I don't necessarily see myself being categorized in one area or another," he says.

Reitsma has been deeply immersed in the business of the Treasury Division since 1986, working on a project to bring workstation technology into the foreign exchange trading room, and he and his staff moved in on a full-time basis last year.

Still, he keeps a foot in both worlds. In addition to overseeing the project in the

Treasury Division, Reitsma also manages a 25-person staff in the central IS department that deals with the bank's credit card customers.

"It's a real tribute to management that I can handle this. We have a management team that runs operations very well without having to take too much direct control," Reitsma says.

"As far as the work I do with treasury," he explains, "the treasury management business team knows more about my day-to-day activities than the MIS management team."

#### Hand in hand

Reitsma's team works in concert with business programmers who are part of the permanent staff of the Treasury Division,

and assimilation has progressed to the point that he says it is sometimes difficult to tell who belongs to which group.

Although Reitsma finds living within the business unit an efficient and comfortable situation, he doesn't necessarily regard the situation as permanent and tries to impress on his staff the fact that an open-ended assignment is not the same as permanent relocation.

"I've always told them this isn't necessarily a permanent thing," Reitsma explains. "If this winds down, nothing is cast in stone, and things could change dramatically for them. I think management is very aware of everyone's concerns," he adds, "and is determined to make this [co-location] a positive experience for everyone concerned." •

## Multiple meanings

**A**t Royal Bank of Canada, intermingling of IS personnel and business personnel — a phenomenon referred to as co-location — can take many forms.

Not all the variations entail moving systems personnel, says Ted Carrett, manager of consulting services for systems and technology at the bank.

Sometimes it makes more sense to bring a business analyst who is working on the final phases of a systems project into the IS department, so that he can be close to IS resources during the testing phase. Among the variations Carrett enumerates are the following:

- Sending a single IS person into a business unit to work one-on-one with a user on a specific project.
- Sending whole teams of IS personnel into business units for indefinite periods of time to pursue technology initiatives that are considered strategic. An OS/2 project might be given that kind of support, Carrett says.
- Removing both IS and business personnel who are working together on a strategic systems project to a remote site for the duration. This, Carrett says, is something that would probably only be done when the project involves leading-edge technology of critical importance to the firm and the ongoing presence of all parties is essential.

ALICE LAPLANTE

# EIS

## If You're Thinking About It...



# Kodak experiments with local support

BY ALICE LAPLANTE

Mention Eastman Kodak Co., and most people in the information systems field will think of outsourcing. However, there's another kind of restructuring going on in the IS department of that Rochester, N.Y., company. Kodak has also been experimenting with the use of decentralized systems teams to support remote Kodak user departments.

The main reason Kodak began scattering systems people in business units was concern about responsiveness to business needs, says Bob Simonson, director of

business computer systems at Kodak's Clinical Products Division.

According to Simonson, "There is simply no way that you can understand the particular challenges facing a business unit unless you are actually there, day by day."

For the most part, Simonson adds, marketing functions were the first areas to obtain their own dedicated systems staffs. His own group has been supporting sales and marketing in the Clinical Products Division since 1986.



Although typical in its concentration on sales and marketing, Simonson's department has always been particularly independent.

In most instances, systems members working in the satellite departments were still formally employed by Kodak IS. A director or supervisor of a combined systems and marketing team acted as a liaison connecting the systems employees in the remote marketing site with central IS.

In the Clinical Products Division, however, Simonson and his 20- to 25-person

staff always worked for the division, not for Kodak IS.

The chain of command is complicated, Simonson says. He reports to the general manager of the division — a Kodak corporate vice president — for business issues such as planning and budgeting concerns. But he also has responsibility to a group manager who oversees the systems operations in Kodak's many health-related businesses and in turn participates in a central executive MIS council.

Although the reporting structure sounds ponderous, Simonson says, the reality is much simpler and looser than it sounds. "We're as autonomous as we want to be," he explains. "Other than conforming to corporate standards, we carry on the business the way we want."

## No longer unique

Setups like this are becoming more common, according to Simonson. Although initially, few Kodak businesses wanted the responsibility of "owning" their own IS function and were "quite happy getting support from the central group," that attitude is changing rapidly.

Even now, most Kodak divisions — even those with systems people in their midst — still rely on the host systems for a significant portion of their systems' needs.

The Clinical Products Division, however, has its own data center supporting two IBM Application System/400 midrange computers and has pursued a number of independent systems initiatives.

"For example," Simonson says, "our division used to rely on the core system to handle our order processing needs, but we decided to go out on our own, purchasing our own software and developing a processing system that fit our needs."

Another project now under way that was designed and implemented at the division level involves automating the Clinical Products Division's sales, marketing and other staffs with a network of 300 Apple Computer, Inc. Macintoshes. •

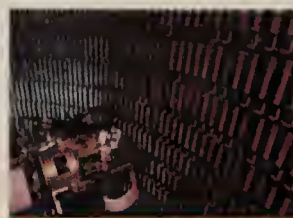
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## Outward bound

In its recent survey on "Critical Issues of Management for 1991," Index Group, Inc. in Cambridge, Mass., found fewer companies planning restructuring moves now than last year. Twenty-four percent said they planned to change the focus of IS activities, as opposed to 32% last year. Of those companies planning to make a change in the direction of decentralization, the following activities were most often mentioned as candidates:

- Systems analysis, design and development, particularly development not vital to the operation of the company.
- Data entry.
- Report distribution and data access.
- Support for personal computers, local-area networks and other technologies.



# Tribune strives to balance independence and efficiency

BY SHERYL KAY

While many information systems organizations are dispersing or scattering functions and personnel across the business landscape, the wind is blowing in the opposite direction at one Chicago-based corporation.

"I feel we are out in front of a new wave," says Tomi Hubert, manager of systems development at Tribune Co., a media conglomerate that consists of 28 operating units, including seven newspapers, 14 television and radio stations and the Chicago Cubs baseball team. Though she says decentralization may still make sense for departmental systems, Hubert is convinced that in companies with main-frame systems, multiple data centers and

large-scale data sharing, centralization is the future trend.

Until 1988, most of Tribune's 28 properties supported their own IS groups, as seemed to befit their status as independent operating companies. At that point, however, management decided that the systems for one struggling newspaper, the *New York Daily News*, should be handled by its corporate IS staff. Profitability at the paper was poor, Hubert explains, and management felt that part of the problem involved poor service from the local systems department.



Hubert foresees centralization wave

Successful experiments

Hubert's group had already had several chances to prove its ability to operate beyond the central staff borders when it was called on to service the financial systems of broadcast subsidiaries that the Tribune acquired during the early 1980s. When the experiment of centralizing the *New York Daily News* systems also produced positive results, the Tribune's management decided to gather all business systems into the core IS fold.

In large part, Hubert says, the decision was based on the opportunity to realize economies of scale from centralization and standardization of all business systems. Less equipment is needed because capacity can be managed more effectively. Peripheral devices and software site licenses "don't have to be replicated across many entities," she says.

Centralizing procurement also means that volume discounts and maintenance contracts can be negotiated more easily and more reasonably.

Business systems such as general ledger, accounts payable, fixed assets, payroll, credit and billing were chosen for centralization because Tribune management believes in the division between production and business systems, Hubert says. Production systems are part of the culture at the operating units and are very much attached to that division's environment and development, while business systems are more generic, she adds.

Although her department is not yet an independent profit and loss center, Hubert describes her group as a performance center that has the goal of expanding its services. Although Hubert says centralization isn't likely to be complete until sometime between 1993 and 1995, substantially more than half of the 28 operating companies have already gone through consolidation, and one-third of those remaining are currently in the process of migrating their business systems.

When a subsidiary is identified as a candidate for business systems centralization, Hubert sends a team from her department to do an on-site cost/benefit analysis and prepare a report on how centralization will be accomplished.

## Calming fears

The only real stumbling blocks, Hubert says, are the apprehension and reluctance of local systems staffs and users. On the part of technical personnel, there is often concern about whether the takeover will reflect badly on them or spell unemployment. In fact, she says, most wind up being absorbed into other positions within the company.

For users, the source of concern is different. "The clients at the subsidiary

don't know us, have never met us, so why should they be convinced that centralization is best, especially if their own IS staff is good and their company is not feeling a pinch?" Hubert says.

To help alleviate these apprehensions, Hubert's staff includes both local IS personnel and users in project steering committees, and she encourages them to talk to other business units that have been through the change.

"Some of it is just a matter of time," Hubert says, "and maybe that's why we move so slowly — we recognize that we have to earn their trust." •

Kay is a Tampa, Fla.-based business consultant and free-lance writer specializing in emerging technologies and human resources.

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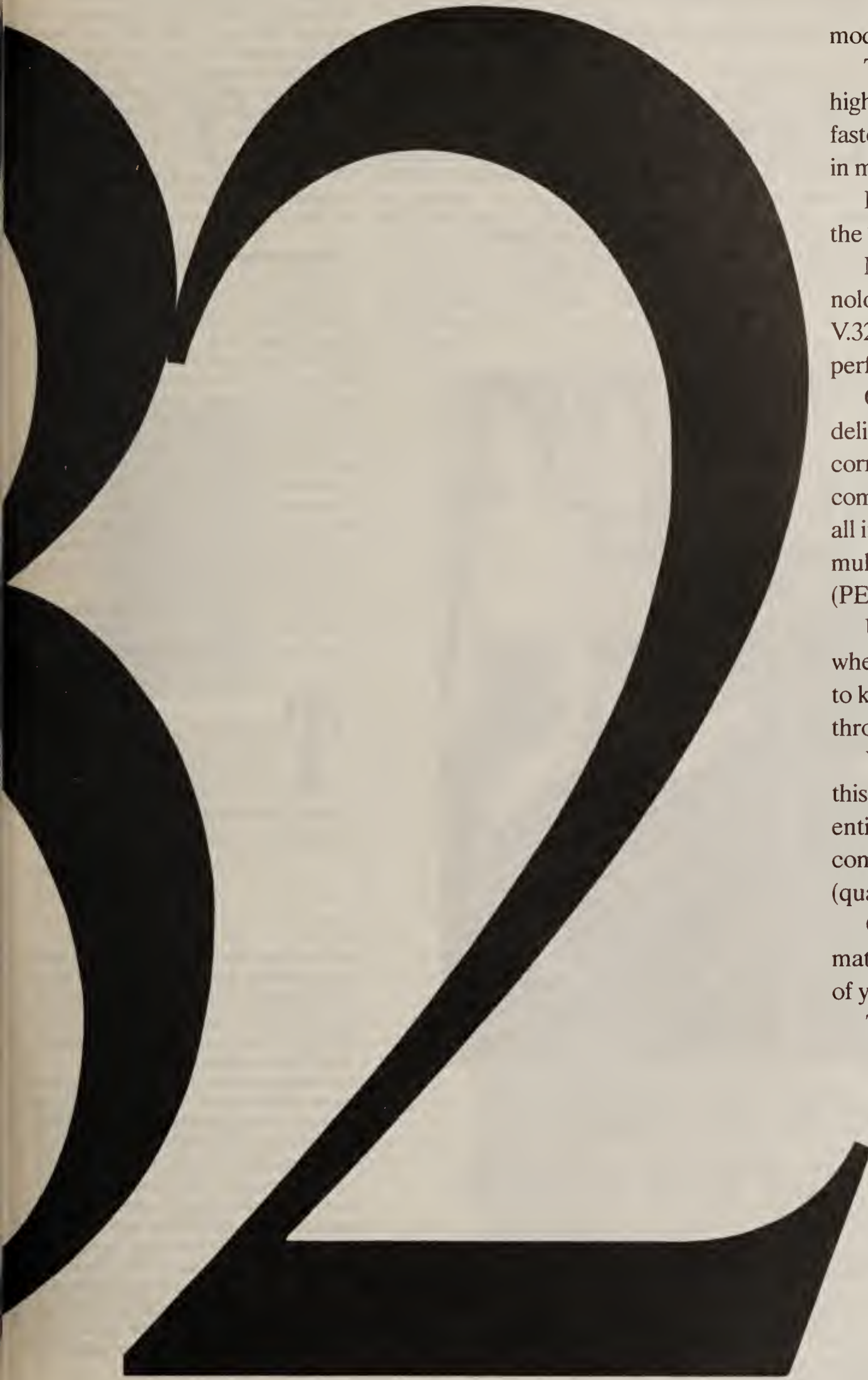
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# How business managers greet arrivals

*Integrating business and information systems staff members requires some adjustments*

BY SCOTT KRAMER

When information systems personnel move into business departments, the managers of those departments often find it necessary to rethink and adjust their management practices.

Peter Grierson, vice president of operations and systems for the Treasury Department at Royal Bank of Canada in Toronto, is a nontechnical manager supervising eight IS managers and a substantial contingent of IS personnel, office opera-

tions and administrative and clerical employees. He says there is no real challenge in dealing with IS personnel involved in front-end trading systems or the development of personal computer systems. Those relationships are fairly easy, he says, because those IS professionals understand both the business and him.

However, with mainframe programmers and analysts, the story is different. "I spend a lot of time explaining to mainframe systems developers what it is we're trying to achieve," he says.

It takes time to blend what are essentially two different worlds, says Guy Martin, who manages both information services and mechanical engineering at Parker Hannifin Corp.'s Hydraulics Division in Irvine, Calif. Only steady and prolonged exposure to the language and thought process of the other culture will bring IS and engineering people to a meeting of the minds.

Of course, it helps "to pick IS personnel wisely, avoiding bit and byte types," he says. But even those with good motiva-

tion and good communication skills, he adds, will have to sit through a certain number of meetings before they are able to discuss projects fluently in language engineers will accept. "By throwing them into the middle of things, including them in staff meetings and product group meetings, I hope that over a period of time, they'll become familiar with the operating lingo and products of the division."

In the meantime, Martin, who has had IS professionals on staff only since July, is resigned to translating. It is not that hard for him: He is a transplant from IS himself.

## Management style varies

Gail Slauson, a user service manager concentrating on production support at Pioneer Hi-Bred International, Inc. in Johnston, Iowa, has managed both IS professionals and nontechnical trainers for four years. According to Slauson, the two groups "tend to have different types of personalities. The technical people tend to require more specifics about exactly what needs to be done," she says. "With the other group, you can be a little more vague about what you want."

Slauson's approach to unifying the two groups involves creating both a climate and an office design that encourage open communication.

"We've always worked consciously on just plain communication," Slauson says. "We have the core group sitting in offices

**T**ECHNICAL PEOPLE TEND to require more specifics about exactly what needs to be done."

GAIL SLAUSON  
PIONEER HI-BRED

close to each other but also sitting in with several of the support staff members for our inventory area. Not only are they not isolated from support staff and end users, they're also not isolated from each other. I think that's helped a lot."

Struggle within the information services department as to which group controls the domain of the computer people is another aspect considered by end-user managers. "We do have very strict project management guidelines that we adhere to, whether they're part of my own group directly or whether they're within the IS group," Grierson says. "We haven't thrown out the IS rule book. It is essential to keep in touch with the larger, centralized IS group to make sure the systems we're developing here in our business are compatible with other systems in the bank."

Slauson says that although she shares control over her data processing people with the IS department, she has never had any problems. "There have been missed deadlines, but typically that's never caused a problem," she says.

"It's just a matter of priorities," Slauson adds. "Sometimes the training and user service area has placed a different priority on things. It's just a matter of discussing the priority and reaching an agreement." •

Kramer is a partner at Engineered Software, an information systems consulting firm in Alhambra, Calif.



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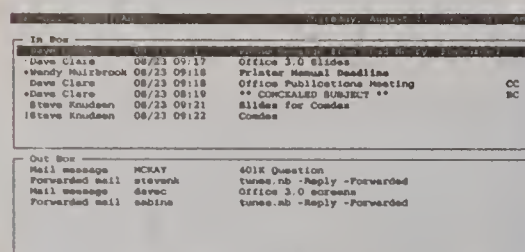
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## Career boosters for women

*Best advice for women IS execs?  
Network and learn to play what men play*

BY MARYFRAN JOHNSON

*Part of an occasional series.*



Learn to play golf. Strike up an interest in baseball, football, basketball — any game that men play wearing uniforms. And don't let the Old Boy Network get you down. In fact, get your own network started by volunteering for high-profile jobs in professional organizations.

These are key recommendations from women executives who have learned to navigate the choppy corporate seas without sinking.

Former U.S. Labor Secretary Elizabeth Dole undertook a "glass ceiling initiative" to attack discrimination that bars women and minorities from the top levels of management, including information systems management. Dole had tagged the issue "a top priority" and asked the department's Office of Federal Contract Compliance Programs to investigate patterns of discrimination.

The U.S. Department of Labor Women's Bureau has also funded a study of career mobility of female executives in industrial, service and government organizations. The study's results will form the basis for further action by the bureau.

On a local level, a few activities and suggestions can increase the chances of women IS managers making it into the upper ranks.

### Be a sport

Playing golf is frequently mentioned as the ideal way to make valuable social contact with chief executive officers and other heavyweights at client firms and competing companies. "These are the outings where you meet the CEO, the president and senior management," says Patricia Farwig, vice president of telecommunications at Mellon Bank in Pittsburgh. "Just about all of these guys play golf!"

Devi Huggins, president of the New York Association for Women in Computing, has followed football for years and finds it a great icebreaker. "It gives you something nonpersonal to talk about," she notes.

Joan Alvarez, vice president of Swiss Re

Services in New York, made the leap about five years ago from managing an IS division to the corporate management level of the Zurich-based reinsurance empire.

In her 30-year career, Alvarez says her most useful networking contacts came through the Life Officers Management Association, a professional organization of 700 insurance companies in the U.S. and Canada.

Yet she and other IS professionals note that networking is networking — regardless of sex. The differentiating factor for women may be their ease in social situations.

"Meeting people, developing a network, asking for information, sharing information — if you put time into that, it comes back to you threefold," Alvarez stresses. "The most important thing is to make yourself visible."

Kathy Hudson, vice president and director of corporate IS at Eastman Kodak Co., says the 600-member Rochester Women's

tions," she says. "I am just beginning to meet some executive women in IS, too."

Among the groups specifically geared to IS professionals, the top choice for networking seems to be the 1,800-member Society for Information Management (SIM).

"I have been very active in SIM, and that has given a number of vice presidents the opportunity to see me work," says Madeleine Weiss, president of Weiss Associates, Inc., a Bethesda, Md.-based consulting firm specializing in IS management. "I think these kinds of contacts really help. They see I can get things done," Weiss adds.

### Meeting of the minds

Index Group, Inc., a Cambridge, Mass.-based consultancy, sponsors the Centrum organization, which brings together top computer executives for discussions of IS issues. The group's members include Hudson, Xerox Corp.'s Chief Information Officer Patricia Wallington and Carlene Ellis, vice president of corporate administration at Intel Corp.

Ellis recalls how Hudson taught her to play golf at one of the Centrum conference gatherings to which both women sometimes bring their families.

Women who have reached the corporate suite rarely use the word "feminist" and seem to shun all-female organizations.

"I don't network as much with other women as I do with men," says Mary Jo Greil, manager of the Management Services and Planning Division at International Paper Corp. in Memphis. "I have always felt uncomfortable seeking out women-only organizations for support. Sometimes I have seen people in these groups become more narrow and defensive."

Another important topic is keeping the right attitude about work, says Kay Mary Hamm, a partner at Romac & Associates, a personnel placement agency.

Women's problems in advancing are "not in skill level or education," Hamm says. Instead, women often become too loyal to their organizations, which makes many hesitant to leave — even for a better job.

"There's a lot of misplaced loyalty to companies," she says. "Women often abdicate the responsibility to self to be loyal to the corporation." Hamm advises a nonemotional approach, clarifying values and not diminishing one's self. A good question, she says, is, "How do you look at yourself in relationship to your employer?" •



Cindy Charles

**Intel's Ellis** learned to play golf at a Centrum gathering in order to make valuable networking contacts

Network is one of her favorite places to trade information and keep in touch with other businesswomen. The monthly meetings are "about two-thirds business and one-third other stuff," including discussions of hot news topics, business problems and even dieting, she says. "Frankly, we just hang out."

Susan Mersereau, vice president and general manager of Weyerhaeuser Information Systems in Tacoma, Wash., keeps in touch with executive-level women through her own network. "I have a lot of friends who are women in high-level management posi-

Johnson is a *Computerworld* senior editor, systems and software.



# The feminine technique in IS

*Women in IS management carry distinctive personal skills*

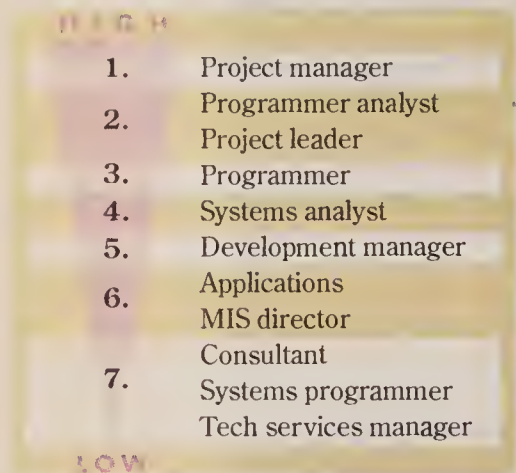
BY MARYFRAN JOHNSON

When women reach the upper echelons of information systems management, they bring more than just skills equal to those of their male colleagues or a keener interest in day-care issues.

The business world tool kits women executives carry, according to executive women and prominent IS figures, are likely to be packed with enhanced negotiating

## Tomorrow's jobs for women

*Big growth areas for women include project manager and programmer analyst, according to corporate human resources directors*



Number of respondents: 15

Source: Romac & Associates

CW Chart: Doreen St. John

skills, a talent for consensus building and a more balanced world view.

"I think we bring an openness and willingness to deal at more of a relationship level," says Madeline Weiss, president of Weiss Associates, Inc., a Bethesda, Md.-based IS consulting firm. "Women tend to be much more attuned to developing ownership and commitment through participating."

Jeanette Horan, who supervises 50 employees as director of software engineering at the Open Software Foundation in Cambridge, Mass., says she believes women tend to be calmer, better balanced and more rational on the job than men. "Women sometimes act in the role of helping everyone to see different points of view," she says.

"Women have always been raised to be managers," adds Devi Huggins, president of the New York Chapter of the Association for Women in Computing. She says she believes that women's natural management skills — once applied solely to families and households — transfer smoothly to the corporate environment.

"If you're a good mother and can take care of children having tantrums, you're just made for the corporate world," she says only half-jokingly. "There are people who will be obstructive, and you can get around them without shouting."

Mike Hammer, an IS consultant and president of Hammer and Co. in Cambridge, Mass., treads cautiously when asked what unique skills women bring to corporate management.

"I hesitate to indulge in stereotype," he explains, "but I'm tempted to use the word 'sensitivity.' I think many women are tuned into nuances of business relationships and interactions in a way more sensitive than that of men."

"The participatory management style of women is fundamental for a quality program," adds Mary Jo Greil, manager of the Management Services and Planning Division at International Paper Corp. in Memphis.

## Less possessive

Women may also have a "less territorial outlook," suggests Patricia Farwig, vice president of telecommunications at Mellon Bank in Pittsburgh. "We want our folks to buy into our decisions. Maybe because we are still proving ourselves, we feel we have to follow through and complete a task to be measured fairly."

The lack of a male-style aggressiveness is not necessarily a handicap, notes Margeurite Zientara, author of *Women, Technology and Power* and editor of *Boston Computer Currents*.

"What I found [while writing the book] was that several of the women, who in person were very sweet and gentle, used that as a way of disarming people. Underneath that sweetness, they were actually driving a hard bargain. It was like they were turning a disadvantage to their advantage," Zientara says.

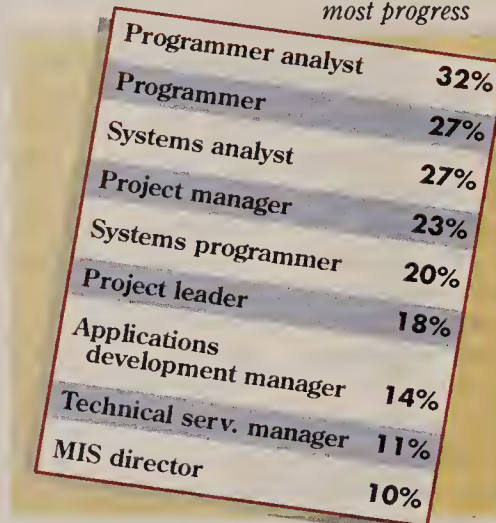
A few more female faces in corporate boardrooms also lends a higher profile to day-care issues — a big concern of working mothers with young children.

As the only woman on the 12-member executive management staff at Intel Corp., Carlene Ellis brings more than a female viewpoint to executive discussions. The vice president of corporate administration is also a single parent raising a 4-year-old son and 10-year-old daughter.

"My promotion was an opportunity to put a different viewpoint on the executive staff — not only female but also fundamentally different than these guys," Ellis explains. "Most of the executive staff's

## Bright spots, but not on top

*Corporate human resources directors say programmers and analysts top the list of IS positions in which women have made the most progress*



Percent of respondents  
Base of 26 (multiple responses allowed)

Source: Romac & Associates

CW Chart: Marie Haines

kids have grown and left. But I think you need a diverse population running your company, because the planet Earth's population is diverse. It's easy to be a leader of people exactly like you."

Yet even with a live-in nanny to help run her home, the Intel executive acknowledges feeling the standard working mother's guilt now and again. "How do I juggle career and home? Carefully," she says, noting that she tries to cut back on business travel whenever possible and avoid overcommitting her free time.

"There are days when I think, 'Why am I doing this?' But I love my work, and I love my kids, and I hope I'm balancing it all properly," Ellis says. "Obviously, I think you *can* do both." •

# British IS execs fare little better than U.S. sisters

BY JOSEPH MAGLITTA

Two decades ago, Great Britain had high hopes for women in computing. Today, many Britons are still hoping.

Like the U.S., Britain saw many women enter the computing field in the 1980s. But as in the U.S., actual percentage increases have stayed flat for nearly a decade. Today, women fill only about 20% of all computer jobs in the UK.

Worse, many British women working in computing are paid less, promoted far less frequently and let go far more often than their male counterparts, according to a new report by Computer Economics, a British research firm.

The study of 657 British firms found that in 1990, fewer women are entering computing, and those who do aren't making it up the career ladder as far as men.

Computing "promised great things for women in its early days as a profession, without traditions or inequality," says Peter Stevens, director of research at Computer Economics. He recently told the British press that it appears "computers have let women down."

Britain's education secretary, John MacGregor, agrees, calling the state of affairs "puzzling and disappointing."

The problem, MacGregor and other observers say, is that computing in Britain is still seen as a male preserve. They blame the usual impediments: too few female teachers, an absence of role models, pressures from peer groups and family and ignorance of career possibilities.

At present, women represent only one in five of all computer programmers and analysts in Britain, compared with about one in three in the U.S.

The picture gets even bleaker at the top. In Britain today, 5.9% of computing managers are women. In contrast, women in Spain make up 8.7% of information systems managers and 6.6% in France.

Despite these numbers, however, there are still bright spots. Male/female pay differences in Britain, for example, are far smaller than those in the U.S. In many positions, such as systems managers and computer operators, women are paid as much as men in Britain.

In other IS jobs, the difference is small: Pay for women professionals, such as analysts and programmers, is 98% of the pay for men (compared with 70% in the U.S.). Raises for women IS managers averaged approximately 3% less than for male counterparts, while the difference was about .5% for other IS professionals.

Britons are not taking the discouraging statistics lying down, however. The British government says it will reform educational programs to abolish sexual stereotyping on women's use of computers. The powerful British Computer Society is also working to kill notions that IS is suited only to degreed young males.

The group is encouraging British business to offer more part-time work and at-home work as well as better training in order to attract more women. •

Maglitta is a *Computerworld* senior editor, in depth/integration strategies.

# Resources for women climbing computing ladder

Numerous professional associations and agencies actively help women get ahead in computing. Here is a sampling:

## Adapso

(703) 522-5055

The computer software and services industry association seeks to facilitate professional contacts between minority- and women-owned firms and large, established information services companies. Publishes directory of firms owned by women and minorities.

## U.S. Department of Labor Women's Bureau

(202) 523-6601

Provides a variety of services and publications aimed at helping women in all businesses. Keeps excellent statistical records.

## U.S. Small Business Administration Office of Small Business Ownership

(202) 653-8000

Runs the Women's Network for Entrepreneurial Training, which sets up tutorial relationships between new and established companies owned by women.

## Index Group, Inc.

(617) 492-1500

This IS consulting organization sponsors the Centrum organization, which periodically unites a small number of top computer executives for wide-ranging discussions of various IS issues.

## Association for Computing Machinery

(212) 869-7440

Publishes monthly and quarterly publications that occasionally feature articles on the role of women in computing.

## Association for Women in Computing

Each geographic area runs its own groups, so there are no national offices. For information, contact Devi Huggins, New York-area president, Manufacturers Hanover Trust Co., (212) 482-4809.




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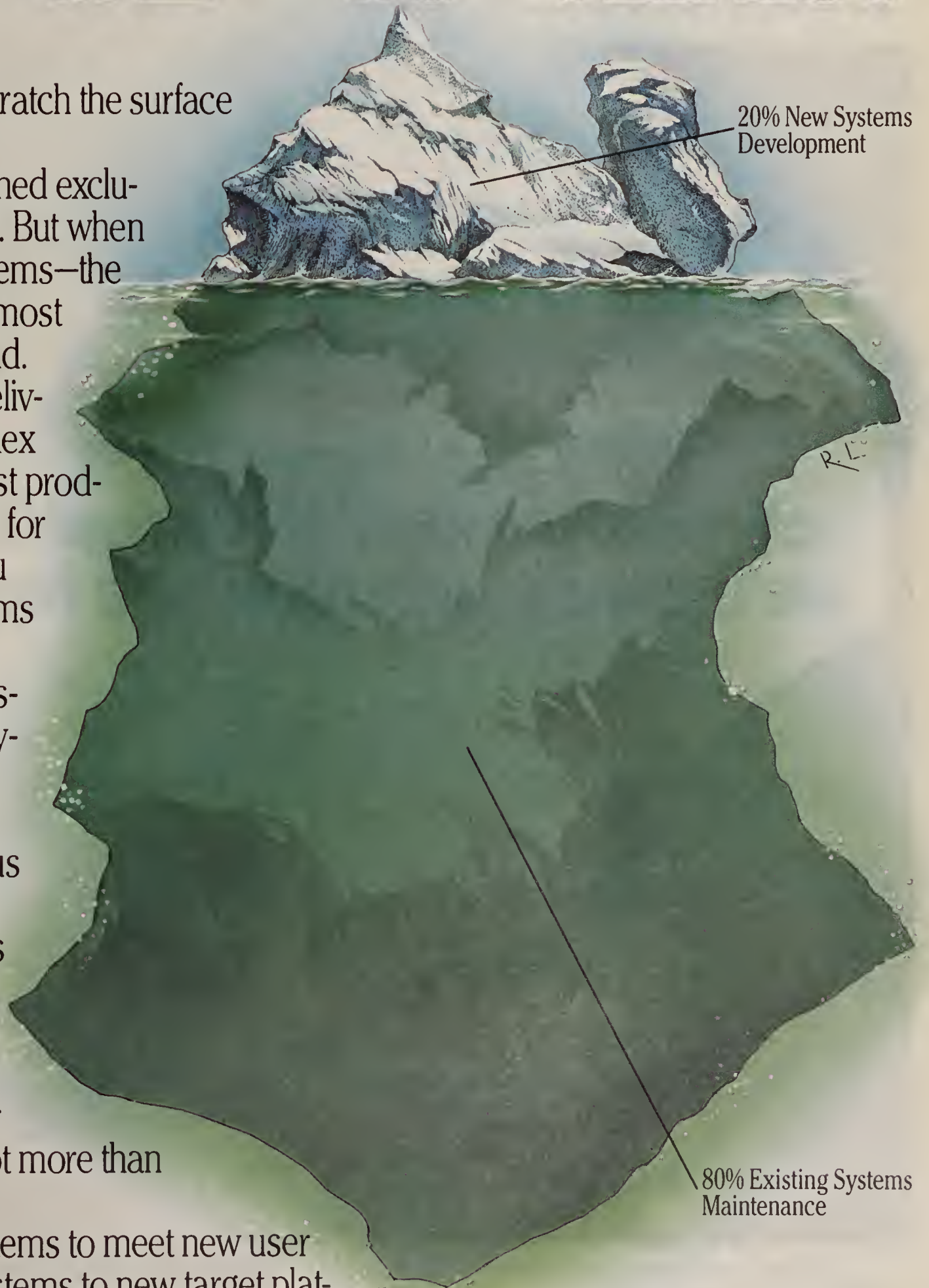
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# Women out on their own

*Many finding satisfying alternatives to corporate rat race*

BY MARYFRAN JOHNSON

In one of the final scenes in the movie *Baby Boom*, actress Diane Keaton confronts a room full of smug male executives who have just offered to buy her homemade baby food company and make her a millionaire.

Much to their shock and her own amazement, she turns them down flat. The rat race, Keaton informs them, will have to get along "with one less rat."

Madeleine Weiss and Diane Kamionka

can identify with that. Weiss, who serves as vice president of the Society for Information Management (SIM), bailed out of the corporate rat race eight years ago by opening her own information technology consulting firm, Weiss Associates, Inc. in Bethesda, Md.

Kamionka walked away from a 20-year information systems career at Western Southern Life Insurance Co. in Cincinnati — where she was the first female vice president in the company's history — to launch her own software company, Cin-

tech Telemanagement Systems, Inc., also in Cincinnati.

Both women acknowledge that dropping off the corporate ladder actually catapulted them into a different kind of contest as self-supporting, independent businesswomen.

"As a friend of mine says, we're shooting with real bullets now," Kamionka says. "The best part of owning your own business is having that elbow room, which you can't get in a corporate structure. Personally," she explains, "you can feel such a sense of accomplishment."



Weiss started her own consulting firm

She adds, "but the lows are also much lower. Things are just more intense."

The idea apparently has some appeal to others: *The Fall 1990 Adapso Directory of Minority and Women-owned Firms* lists nearly a dozen firms — ranging from computer services, publishing, consulting and software development — that are headed by women.

From a position as programmer/analyst at Bell Systems, Inc. in the early '60s, Weiss moved briskly upward into management consulting work at Electronic Data Systems Corp. and eventually into a full-time faculty position directing the MIS program at American University in Washington, D.C.

It was the familiar career/family struggle that fueled Weiss' decision to fire up her own company. "I wanted the self-determination of my own firm, and I wanted the flexibility with my children. Being a mother is very important to me," says Weiss, whose three children were six, 11 and 14 the year she established the busi-

**T**HE BEST PART of owning your own business is having that elbow room."

DIANE KAMIONKA  
CINTECH

ness. "When it comes right down to it, I wanted control over my work life."

What had especially begun to grate on her nerves as a corporate consultant was the "drop everything and go" mentality. "I didn't want to be told, 'You have to go to Dallas tomorrow for six months,'" she recalls. "My husband had a career, too, and he was not willing to pick up and move."

Shifting into her own consulting business was therefore a logical next step. "The irony is that now I spend a lot of time traveling," she says, "but the difference is that I'm making the choice." Her clients today include Corning, Inc., Black & Decker Corp. and The World Bank.

"These days, I do bring too much work home," Weiss acknowledges. "One of the downsides of having a business is there's always work to be done."

Kamionka copes with that same problem. "I wanted to be passionate about something, but I don't think I expected this to take up 100% of my life," she says with a sigh. "I have trouble just making myself read the Sunday *New York Times* now so I'll have something to make small talk about."

Today, Cintech has 13 employees and is about to double in size to handle a new personal computer-based product about to be announced. The company markets Tele-Series, a range of telecommunications accounting modules that runs on DOS-based systems and Digital Equipment Corp.'s VAX/VMS.

Kamionka plans to grow Cintech to a healthy size and then sell it. "In five years, I want to be lying on the beach!" she jokes. Her next career metamorphosis will likely be troubleshooting at small companies as a "business turnaround" specialist, she says. •

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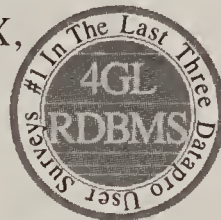
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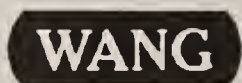




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## Can Concurrent make a comeback?

BY NELL MARGOLIS  
CW STAFF

TINTON FALLS, N.J. — With commercial demand for Unix systems just starting to take hold in the autumn of 1988, real-time systems vendor Concurrent Computer Corp., fresh from a merger that netted it Unix know-how, seemed poised to catch a rising wave.

Instead, the firm — a union of two seemingly complementary vendors that wedded one's expertise with low-end systems to the other's specialty of high-end systems — has spent precious lead time bogged down in post-merger misery while traditional vendors co-opted its technological edge.

A financier's vision and a technologist's dream, the merg-



**CEO Brown facing rough competition and tough economy**

er that formed Concurrent rapidly devolved into a corporate culture nightmare, according to industry observers and company insiders. Two years of wrestling with its effects has taken a severe financial toll on the firm

(see chart page 106). Now in the middle of an attempted comeback under the direction of a turnaround specialist, Concurrent may find its most daunting prospect is to convince would-be customers that technology has not passed it by. "I think that it has, and now they can't compete," said Raymond Tellier, information systems director at Buxton, Inc., a Concurrent user site in Springfield, Mass.

When Westford, Mass.-based Massachusetts Computer Corp. (Masscomp) acquired Concurrent and merged the companies under that name in August 1988, the game plan was to wed Masscomp's low-end, Unix-based real-time computer line with Concurrent's high-end real-time computers, migrate the proprietary Concurrent offerings to Unix and blanket the market.

"Two years ago," said a former Concurrent executive who asked not to be identified, "this was hot stuff. But real-time extensions to Unix are getting to be commonplace."

In the interim, mainstream

## Major merger mishaps

**E**choing the mistakes of former parent Perkin-Elmer, Concurrent may be watching a bright future fade to black because of a merger that worked better in theory than in practice.

- 1974: Aiming at leveraging itself into the computer industry, traditional, conservative Perkin-Elmer acquires entrepreneurial Interdata.
- 1974-1985: Perkin-Elmer's bold move runs aground as corporate cultures fail to meld.
- 1985: Perkin-Elmer leaves industry, spins off computer group (formerly Interdata) as Concurrent.
- 1988: Aiming at blanketing the Unix-based real-time computer market, traditional, conservative Concurrent merges with entrepreneurial Masscomp.
- 1988-1990: Concurrent's bold move runs aground as corporate cultures fail to meld.
- July 1990: Firm lays off 450 workers and closes plant.
- Firm reports \$38 million net loss on revenue down 15% for fourth quarter.
- September 1990: CEO James Sims abruptly departs firm.
- Firm reports \$9.9 million net loss for first-quarter 1991.

players including IBM, Digital Equipment Corp., Hewlett-Packard Co. and Sun Microsystems, Inc. have launched or enhanced their own Unix-based,

real-time entries, according to John Logan, an analyst at Aberdeen Group in Boston.

"The [user] reactions you're  
*Continued on page 106*

## Firm alleges word processor dumping

BY GARY H. ANTHERS  
CW STAFF

WASHINGTON, D.C. — The federal government has launched an investigation into allegations that companies based in Japan and Singapore are selling personal word processors in the U.S. at less than their fair value. The action was requested on behalf of U.S. industry by Smith Corona Corp., which says the firms have been dumping in the U.S. for a year.

Smith Corona Chairman Lee Thompson said offenders include Brother Industries Ltd., Panasonic Co., Canon, Inc., Sharp Corp. and others. He said a word processor selling for \$995 in Japan is being sold by the companies in the U.S. for about \$400. Smith Corona has no choice but to meet that price but would sell the unit for about \$600 if fair competition existed, Thompson said.

The U.S. is the world's largest market for word processors

and is the only country where the firms are currently dumping them, Thompson said. He declined to give sales figures but said Smith Corona has an estimated 50% of the domestic market for typewriters and word processors, which together will account for sales of some 3 million units this year.

### Investigating damage

The U.S. Department of Commerce's International Trade Administration (ITA) is investigat-

ing whether dumping is occurring. It has notified the U.S. International Trade Commission (ITC) and asked it to determine whether imports of word processors from Japan or Singapore are injuring or threatening to injure U.S. industry. The ITC is scheduled to make a preliminary finding by Dec. 21. If affirmative, the ITA is to announce its preliminary finding on the dumping question by April 15, 1991 and its final determination by July 1, 1991. The ITA's final conclusion on the injury question would come 45 days after that.

If dumping and injury are found to have occurred, the offending companies will have to pay a penalty on every item exported to the U.S. thereafter, the fee proportional to the amount by which their U.S. prices were found to fall below fair value. Such penalties are assessed for at least one year, then may be removed.

A spokeswoman for Sharp said the company would not comment on the investigations until it has filed a formal reply with the U.S. government. Representatives of the other firms could not be reached for comment.

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# EC outlining information technology strategy

BY ELIZABETH DE BONY  
IDG NEWS SERVICE

BRUSSELS — Next month, the European Community Commission will issue a document outlining its strategy for the information technology sector.

The strategy could give the first indication of how the commission plans to revamp its 10-year-old Esprit program in information technologies, Filippo Maria Pandolfi, the European Community's (EC) research and development commissioner, said last month at the close of a week-long conference devoted to Esprit. During the conference, companies and

commission officials analyzed Esprit's successes and identified technological changes that have revolutionized the sector over the last couple of years and that should be taken into account in a second revamped Esprit effort.

Major changes targeted by the conferees included the growing importance of software, which currently represents 45% of the information technology market and is expected to account for 80% by the mid-1990s, the acceleration into open systems and shorter life cycles for technology, in contrast with the need for long-term company strategies. The conferees also noted the development of parallel

systems — a trend that could herald the emergence of a new industry based on high-performance, low-cost computers.

Faced with these changes, Jean-Marie Cadiou, head of the commission's information technology division, suggested that Esprit funding be doubled from its current \$2.08 billion.

Cadiou underlined the importance of information technology R&D by pointing out that of the 13 identified critical "emerging technologies," 10 fall in the information technology sector. Basing his comments on a study by Price Waterhouse for the U.S. Department of Commerce, Cadiou explained that of the 10 in-

formation technology developments, Europe is ahead of or even with the U.S. and Japan in eight categories. According to a table summarizing the study, the EC leads the U.S. in digital imaging technology and flexible computer-integrated manufacturing (CIM) and is even with it in advanced semiconductors, high-density data storage, sensor technology, superconductors, advanced materials and software technology. The EC falls behind the U.S. in artificial intelligence, high-performance computing, optoelectronics, biotechnology and medical devices.

The EC leads Japan in flexible CIM and software technology, is on par in AI, digital imaging technology, sensor technology, superconductors, biotechnology and medical devices and falls behind in advanced semiconductors, high-performance computing, high-density data storage, optoelectronics and advanced materials.

Cadiou warned that although the EC is currently well positioned, it does face some "strong disadvantages in the technology race." Those include the following:

- While the U.S. claims to spend only \$1.5 billion in direct R&D, another estimated \$70 billion is spent on defense funding, of which 10% goes to research in the information technologies.
- Japan benefits from very low interest rates. While EC and U.S. firms may pay an average 18.5% on R&D projects, Japanese firms pay only 8.5%. In the UK, the rate is a staggering 25%, Cadiou said.

*De Bony writes for the IDG News Service's European Bureau.*

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- 1 Manufacturing
- 2 Retailing
- 3 Wholesaling/Distribution
- 4 Insurance/Banking/Financial
- 5 Professional/Service
- 6 Education
- 7 Health Care
- 8 Government
- 9 Communication Carriers
- 10 Voice Communications Equipment
- 11 Computer Equipment
- 12 Datacom Equipment
- 13 Information Service

### 14 Consultant

### 15 Software

### 16 Other (Specify)

### C. Your Job Title / Function (Circle One)

- Communications users:**
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  - 2 Marketing/Sales
  - 3 Production/Operations
  - 4 Telecom Management (Voice/Data)
  - 5 Voice Communications Management Only

### 6 Data Communications Management Only

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- 8 EDP System/Program/Planning
- 9 Office/Automation Systems Management

### Communications manufacturers/vendors:

- 10 General Management
- 11 Marketing/Sales
- 12 Hardware Manufacturing & Development
- 13 Software Development
- 14 Engineering
- 15 Consultant
- 16 Other (Specify)

### D. Size of Your Organization (Circle One)

1. Under 100
2. 100-499
3. 500-999
4. 1,000-4,999
5. Over 5,000

### E. What is your role in the purchasing process of communications equipment and services? (Circle One)

1. Final Decision Maker
2. Recommend
3. Specify
4. No role

No one under 18 admitted. This form may be duplicated.

11

## NATIONAL BRIEFS

### Microsoft goes natural

**Microsoft Corp.** took a major step in its move beyond the graphical user interface last week by strengthening its financial and technological ties with Berkeley, Calif.-based **Natural Language, Inc.** A \$1 million investment gives Microsoft, a Natural Language minority stakeholder and licensee since 1987, 10% ownership of the privately held firm whose technology offers a route to new dimensions in easy-to-use applications.

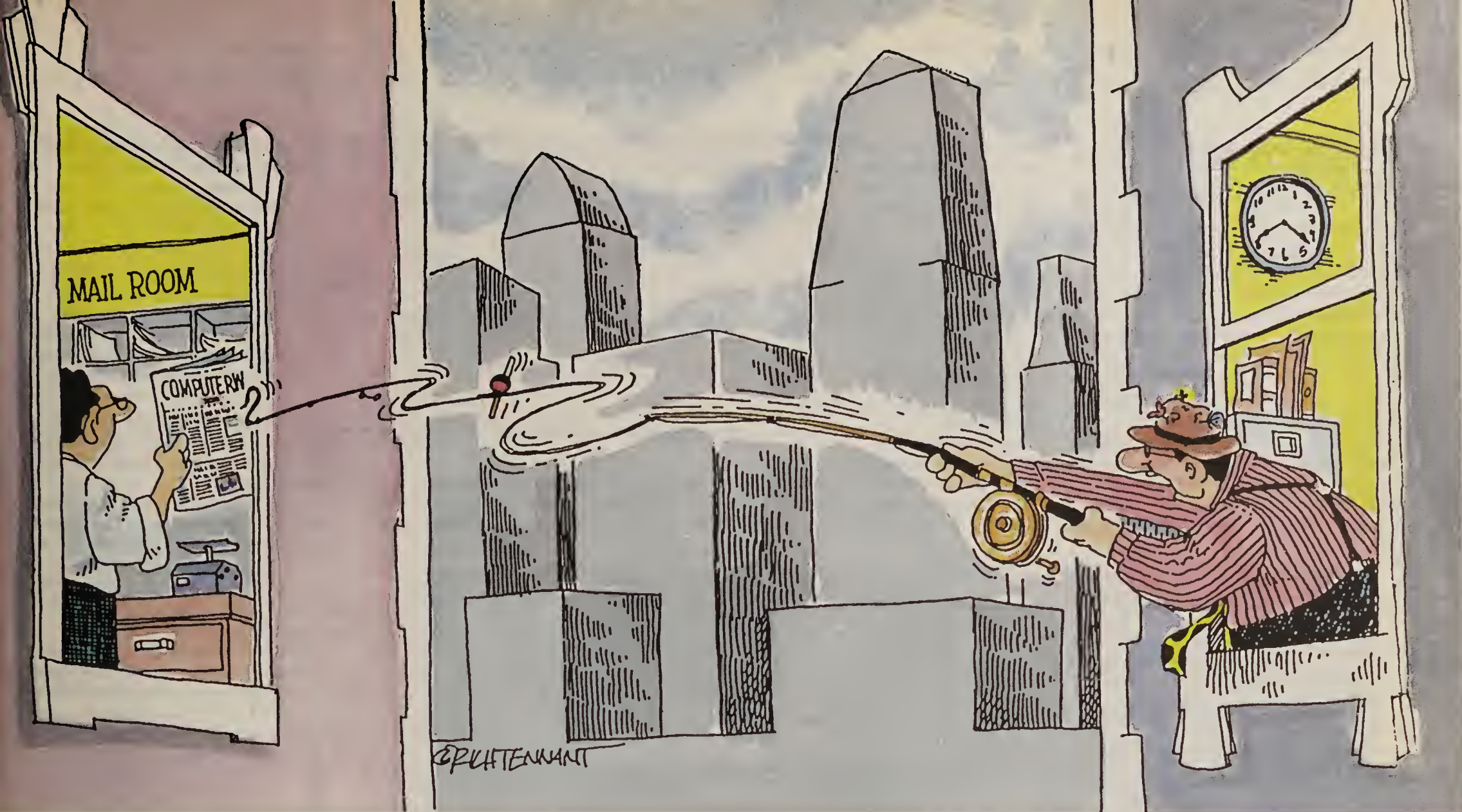
### Compuadd II: The superstore

Austin, Texas-based personal computer retailer **Compuadd Corp.** has targeted suburban Chicago as the maiden market for the computer "superstores" on which the firm is pegging its next round of expansion. In contrast with its present 74 stores, which average 5,500 sq ft, each new emporium will span 12,000 to 25,000 sq ft and offer a proportionally broader range of wares, according to Compuadd. The first of 12 proposed superstores is scheduled to open this week in Schaumburg, Ill.

### It worked for Tinkerbell

Recession notwithstanding, a blue-ribbon roster of PC company executives who responded to a survey sponsored by market research firm Technologic Partners said they believed their sector would increase 12% in the coming year and 14% in 1991. The respondents also predicted an approximate 19% growth in dollar value for PC-related software in 1991.





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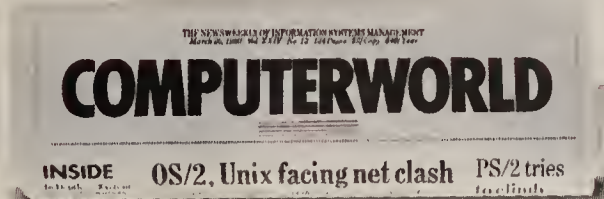
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## Concurrent

CONTINUED FROM PAGE 103

going to find to Concurrent could depend a lot on which world you're asking about: the Masscomp world or the old Perkin-Elmer one," said Peter Staaterman, president of Global Electronic Markets, Inc. in Bedford, Mass. Perkin-Elmer Corp. spun off Concurrent in 1985. Staaterman described himself as an "extraordinarily satisfied" user of proprietary processors from the Perkin-Elmer spin-off.

Not all agree. "We're going to be Concurrent users for about three more months — then we switch over to the [IBM] RS/6000," Tellier said. Disenchanted with its Concurrent XF610, Bux-

ton looked at entries from a host of vendors before settling on the IBM workstation/server line.

"Everything we looked at was 10 times faster than Concurrent, at half the price," Tellier said. "We're going to pay for our two IBM RS/6000s in what we save on maintenance over two years."

Denis Brown, who was named Concurrent chief executive officer in September, said the challenge of differentiating its wares in an era of brutal competition and tight-

ening purse strings "is something the whole industry will have to grapple with. The strength [we] will bring to the mix is

### Downward track

Financial news has been mostly downhill for Concurrent since it was merged with the former Masscomp

	Q1 '90*	Q2 '90	Q3 '90	Q4 '90	Q1 '91 (Ended September)
Revenue	\$87M	\$89.02M	\$85.71M	\$78.39M	\$70M
Net income	-\$1.6M	-\$2.23M	\$164,000	-\$38M	-\$9.9M

\*Acquired by and merged with Masscomp

Source: Concurrent Computer Corp.

CW Chart: Tom Monahan

software, tools and applications. We won't just be selling a box."

Indeed, Concurrent's latest real-time Unix entry, the Motorola, Inc. 68040-based Series 7000, announced last month, arrived with a long list of software vendors already signed up to support it.

However, while Lew Brentano, an analyst at market research firm Gartner Group/Infocorp, gave the machine high technological marks, he said he sees the new line as an unlikely vehicle to fuel Concurrent back

to the front ranks.

"The good news about the 7000 is that it offers the best price/performance for a real-time system out there today," he said. "The bad news is that to get it there, Concurrent has cut its price per unit so dramatically that they have to sell 20% more just to break even."

Nevertheless, a new team at the top is giving industry observers some degree of faith that Concurrent will be there to fight

**T**HE GOOD NEWS about the 7000 is that it offers the best price/performance for a real-time system out there today."

LEW BRENTANO  
GARTNER GROUP/INFOCORP

for a piece of the turf it had once hoped to own.

Turnaround expert Brown, who presided over the reconstitution of a \$1 billion Penn Central subsidiary between 1985 and this year, was brought in with a mandate to repeat the act.

In his first weeks at the helm, Brown won grace periods from banks and bondholders holding debts on which Concurrent technically is in default. Last week, the formal grace periods ended; however, recapitalization discussions with the lenders are ongoing, Brown said. He added that a new business plan on which the firm has been working since September should be in the lenders' hands within days.

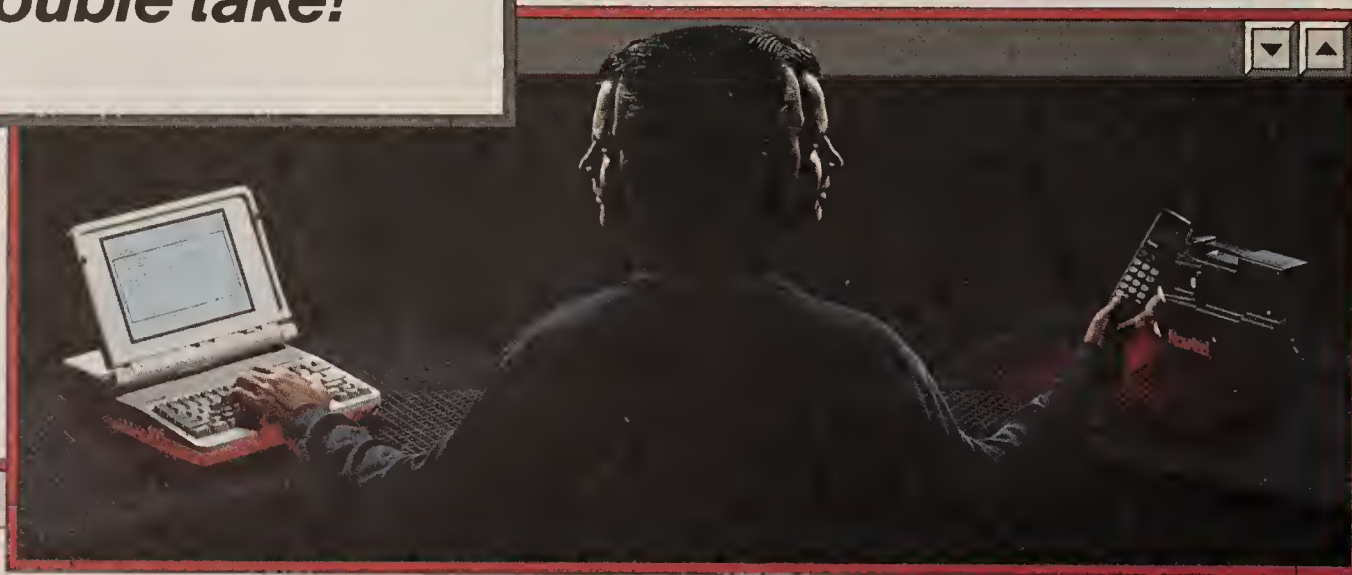
While others raised the issue of technological extinction, Brown remained sanguine. "We're still winning major new business," he said. "I don't see this as an issue." September, for instance, was marked by a \$1.1 million order for six Concurrent 8400 reduced instruction set computing real-time Unix systems from a government subcontractor.

Brown acknowledged that the issues first tackled by the new team he has assembled were financial and organizational rather than technological — priorities dictated by the assumption that survival comes before growth.

However, Brown said, technology has not been neglected: Formerly warring development teams have already been consolidated into one unit, with one direction to march in and a new leader — Vice President of Development George Sampson, brought on-board in September — to march with.

The new business plan — an early version of which was apparently sufficient to sway the bankers to leniency — will be made public by the end of the year, Brown said.

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# NASA steps up effort to improve industry ties

BY GARY H. ANTHERS  
CW STAFF

The National Aeronautics and Space Administration (NASA) has received 30,000 requests for technology from the private sector since it established its technology transfer program 28 years ago. Now, the space agency says it wants to do better.

"In the past, we've waited until a NASA-sponsored technology was on the shelf before looking for commercial applications. That process takes 10 years. Now we want to do things in parallel," Adm. Richard H. Truly, NASA administrator, said to 1,500 industry hopefuls attending the first annual conference and exposition of NASA technology in Washington, D.C., last month.

The exposition is part of NASA's strategy to forge stronger government-industry ties. The space agency is taking other steps to expand the scope of its programs by which technology in artificial intelligence, computer hardware and software engineering, data management, robotics and other disciplines finds its way into the production lines and onto the balance sheets of U.S. corporations.

## Bigger than Apollo

In particular, NASA sees its major new programs — the Space Station, the National Aerospace Plane, the Earth Observing System and the Mars mission — as generating a flood of new technologies that will dwarf those that flowed from the Apollo program of the 1960s. "A question [for these programs] is how to maximize technological and economic spin-offs," said Frank E. Penaranda, the NASA official in charge of commercial programs. "The key is to build in technology transfer from the beginning."

Tantalizing examples were not lacking at NASA's Technology 2000 conference. In two tracts devoted to computer-related technology, NASA presented projects such as these:

- Scientists from the Ames Research Center described the virtual environment display system, which allows a user to explore a 360-degree "virtual" environment via a head-mounted three-dimensional display. The Johnson Space Center is helping a university adapt the technol-

ogy so that medical students can navigate inside virtual cadavers.

- A researcher from the Langley Research Center described a NASA project to develop a high-performance rewritable optical disc recorder. It is intended to record at 300M bit/sec. per disc, hold 10G bit of data per disc, transfer data at 1.8G bit/sec. and orbit the Earth for two to four years without repair.

- A computer scientist at the Goddard Space Flight Center described an experimental method for accessing data over heterogeneous systems without having to know the access methods of the constituent systems.

An even more direct way that NASA gets its computer smarts out to industry is through its Computer Software Management and Information Center (Cosmic) at the University of Georgia. The NASA-funded center collects software written by and for the various NASA facilities, scrubs it for bugs, reviews documentation and offers it for sale to the public.

The Cosmic catalog contains 1,200 software titles selling for an average price of \$600 each, or \$300 for personal computer-based programs. They span nearly every conceivable field, from accounting to nuclear physics, but are concentrated in scientific and engineering applications.

In most cases, source code is provided without restriction.

NASA operates nine regional Technology Utilization Offices that help match industry needs with NASA technology. Ten university-affiliated Industrial Applications Centers provide information retrieval services from 100 million scientific documents in a NASA database and from 600 other databases. The space agency also publishes NASA "Tech Briefs" and "Spinoffs," publications aimed at technology transfer.

NASA will also enter into various kinds of consulting arrangements with companies, sometimes for a fee and sometimes at no cost. Also, the space agency has a portfolio of 4,000 patents available for exclusive or nonexclusive licensing.



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## INTERNATIONAL BRIEFS

### Deeper shade of red

Struggling Dutch technology vendor **N.V. Philips** shocked the European computer industry with an announcement that it now expects to incur net losses of some \$2.3 billion in 1990 — roughly double the \$1.16 billion loss that the firm earlier anticipated.

### Novell, si

A Spanish court recently ruled that Madrid-based **Computer Technology di Espana**, a software development firm, violated **Novell, Inc.**'s intellectual property rights by copying Novell's Netware and marketing it under the name Compnet. The court ordered the Spanish firm to surrender all Compnet copies — and, once determined, revenue — to Novell.



# COMPUTER CAREERS

## Tired of takeovers? Try nonprofit groups

*Pay is sometimes lower, but those who have left commercial IS behind say benefits go beyond salary*

BY SHERYL KAY  
SPECIAL TO CW

Information systems professionals seeking relief from the corporate chaos of takeovers and competitive turmoil may find their ideal career in nonprofit organizations.

Although nonprofits generally offer lower salaries, they usually provide generous benefits and job security. They are also not without their competitive zest and technological pizzazz.

"In a sense, we are absolutely no different than for-profit organizations," says James Burger, director of IS and services at the Jewish Federation and United Fund of Metropolitan Chicago.

For example, Burger's agency vies for the same funds being sought by other charities — a definite form of competition. Under Burger's direction, the federation's IS team has developed a number of applications, including a statistical demographics system to target the right people at the right time during fundraising periods.

The IS department at the Boy

Scouts of America in Las Colinas, Texas, employs similar competitive tactics. Susan Spalter, national director of the IS division, says her group developed and maintains several revenue-building systems, including membership, wholesale and retail sales, magazine subscriptions and investments.

By helping to keep the organization financially fit, Spalter says, the IS division indirectly plays a part in making the Boy Scouts a growing, attractive organization for children and parents alike.

The lure of competitive challenges aside, IS professionals say there are hidden benefits in the nonprofit field. John Kopkovits, director of information resources at the H. Lee Moffit Cancer

Center and Research Institute in Tampa, Fla., says working in a hospital setting has enabled him to feel like he is making a positive contribution to society. "I never felt this in the corporate world," says Kopkovits, who spent the first eight years of his career in the for-profit sector.

Spalter likes to refer to these hidden nuggets as "psychic in-

come," or the part of your job that makes you feel good about yourself. Before joining the Boy Scouts, she worked for 16 years in the commercial IS world.

While there were times, Spalter says, when she was proud of her accomplishments in commercial business, "it never compared to the thrill I get when I come upon a group of scouts on a hiking trip, and I know that what I'm doing makes their scouting possible."

### The downside

Of course, nonprofit is certainly not a perfect world for IS professionals. One major frustration many IS managers have to deal with in nonprofit organizations is a lack of business awareness.

"We have 400 councils around the U.S., and some of these [program organizers] are not paying attention to the bottom line. We do cost/benefits analyses, but not everyone understands why we have to do this, because they don't view everything from the profit side," Spalter says.

A second drawback is that salaries in nonprofit organizations are almost always lower than those in corporations, says Richard Wonder, national director of the IS division at Robert Half International in Menlo Park, Calif.

However, benefits such as va-

cation time, medical plans and pensions are almost always better in nonprofit groups, Wonder adds.

In addition, other than organizations that rely on yearly grants, few nonprofit groups are going out of business or merging

**M**ANY IS PROFESSIONALS say there are hidden benefits in the nonprofit field. For example, it can make you feel like you are making a positive contribution to society.

with other organizations, so job security is usually very strong.

Though lagging in pay, nonprofits are frequently advanced in the use of technology, Kopkovits says. In many areas, certain software products are now being installed — particularly in clinical environments — that call for highly skilled applications developers.

The use of the latest technology can also boost salaries to higher levels. For example, Kopkovits says, his organization is willing to pay competitive sala-

ries to get the skills it needs.

IS professionals should seek areas in nonprofit organizations that use the latest technology to guarantee that their skills can be transferred from profit to nonprofit environments and vice versa, Wonder advises.

Many IS professionals who wish to leave nonprofit organizations after a lengthy career and enter the commercial sector fear that their backgrounds may not be taken seriously.

For instance, Burger thinks that his 11 years of nonprofit experience may unjustly carry some sort of stigma.

"Employers might question what sort of exposure I have had and how creative I have been," Burger says. He says he hopes that if he's ever in the position of looking for a new job, the employer will look past what the organization does and judge him by his accomplishments.

However, to generalize that anyone from a nonprofit organization cannot adjust to commercial firms is an unfair assessment, Wonder says. Any profit-making company that espouses this philosophy may be passing up qualified candidates, he adds.

Kopkovits underlines that misconception: "We are managers of expectations and agents of change, just the same as in any technical department of any corporation."

Kay is a Tampa, Fla.-based business consultant and free-lance writer specializing in emerging technologies and human resources.

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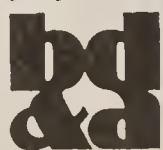
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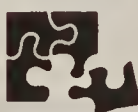
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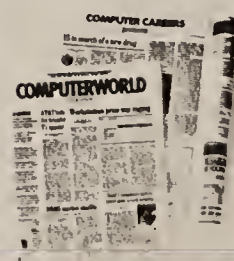
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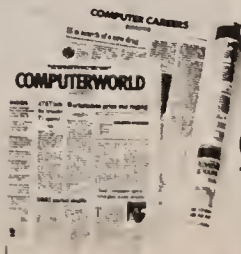
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## Inexpensive options simplify connectivity

BY SIMSON L. GARFINKEL  
SPECIAL TO CW

Connectivity among different kinds of computers — exchanging files between IBM Personal Computers, Apple Computer, Inc. Macintoshes and Unix workstations, for instance — has become much more affordable and less complicated in recent years. From the standpoint of information systems managers, there are more options and a broader market of products to select from. We haven't reached connectivity nirvana, however. Different PCs and workstations from different vendors still store information on floppy disks and magnetic tapes in fundamentally incompatible formats. But when properly configured, all of the leading brands of computers — and many more — can transparently access one another's files over a network.

There are two levels to interconnecting disparate workstations: physical and logical. Two workstations are physically connected if they share the same local-area network — which is not

hard to arrange, given that third-party vendors now provide Ethernet and token-ring cards for Macintoshes, PCs and a variety of Unix workstations.

The cost of the hardware depends on how quickly users need to transfer information. Every Macintosh comes standard with a Localtalk interface, but Localtalk only transfers 230K bit/sec. If a user wants high-speed transfer, he'll have to buy an Ethernet or token-ring interface card for each computer he wants on the network. Most of these cards cost between \$400 and \$600.

However, physical connectivity is only the first phase. The second, or logical connection, is more complicated, because it can involve reconciling incompatible disk storage, network server software and application software formats.

Network software comes in two parts. Server programs make the files stored on servers available over the network. Client programs run on local computers and make the files stored on the server available to the operating system.

On MS-DOS computers, Novell, Inc.'s proprietary Netware

is the most popular networking protocol. Netware runs with Ethernet. Software clients are also available for the Macintosh and OS/2, which means these computers can access files stored on a Netware server. But Netware is expensive: The server software costs between \$3,000 and \$8,000, depending on options. This may seem steep, but 250 users can share a single Intel Corp. 80386 server using the \$7,995 Netware 386.

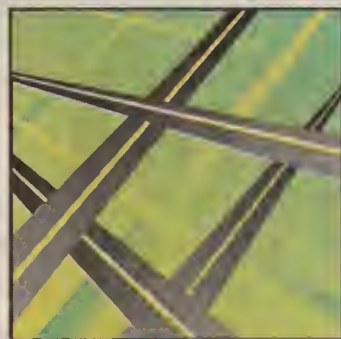
Netware clients cost approximately \$200 per workstation.

If an office is mostly using Macintosh computers, users will probably choose Apple's AppleShare remote file system. To use AppleShare, users must dedicate one Macintosh computer to be a file server, and only files stored on the server can be shared among users. While any Macintosh can be a server, the faster ones, such as the Macintosh IIFX, give better performance to all users. Of course, the faster Macintoshes are also more expensive. The server costs \$790.

Next year, however, Apple's long-awaited Version 7.0 operating system "will allow [users] to set up part of [their] individual Macintosh as a nondedicated

server," says Doug McLean, Apple's product line manager for network integration.

In the Unix world, Sun Microsystems, Inc.'s Network File System (NFS) is undisputedly the most popular network file system. Although NFS was originally a proprietary protocol, it is now a standard. The free software is available from the University of California at Berkeley. Also, NFS is highly portable, because it is based on the industry-



standard Transmission Control Protocol/Internet Protocol. As a result, it is available for practically any computer for which a network interface can be purchased, anything from PCs and Macintoshes to supercomputers.

Unfortunately, NFS pays a price for this portability. "The performance of most NFS solutions with DOS does not really compare with Netware," says James Van Bokkelen, president of FTP Software, which sells NFS for the IBM PC.

However, the advantage of NFS is its adherence to an open and well-thought-out standard, Van Bokkelen says. Since NFS is a standard, it is available on far more platforms than any other network file system. And NFS

software is a good investment, because it is likely to be supported by any computers users buy in the future.

Unfortunately, merely being able to access files stored on the server is often not enough. If a user uses his PC to access data written by a Macintosh, he must be sure that the application programs on the two computers can interchange files in a mutually compatible format.

For example, the Macintosh version of Microsoft Corp.'s Microsoft Word can read and write data files in a variety of formats, including the format used by Microsoft Word running under Windows 3.0. If a user wishes to use a specific application on a variety of platforms, he should be sure that the various versions can all exchange data files.

Sharing plain text files between operating systems can often be more complicated than sharing data files from application programs. This is because DOS, Apple and Unix use different series of control characters to indicate the end of a line and the end of a paragraph. Conversion between the formats often requires nothing more than search-and-replace inside a word processor, but on a daily basis, the need to convert is annoying.

Garfinkel is a free-lance writer and computer consultant based in Cambridge, Mass.

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#### The BoCoEx index on used computers

Closing prices report for the week ending November 30, 1990

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XT Model 089	\$550	\$625	\$400
AT Model 099	\$650	\$975	\$500
AT Model 239	\$875	\$1,025	\$750
AT Model 339	\$925	\$1,100	\$900
PS/2 Model 30-286	\$1,100	\$1,300	\$1,025
PS/2 Model 60	\$1,500	\$1,800	\$1,400
PS/2 Model 70P	\$3,425	\$3,450	\$3,175
Compaq Portable II	\$900	\$1,050	\$875
Portable 286	\$1,100	\$1,450	\$1,000
SLT 286	\$2,500	\$2,625	\$2,000
Portable 386	\$2,600	\$2,800	\$2,500
LTE 286	\$2,000	\$2,100	\$1,850
Deskpro 286	\$1,000	\$1,200	\$975
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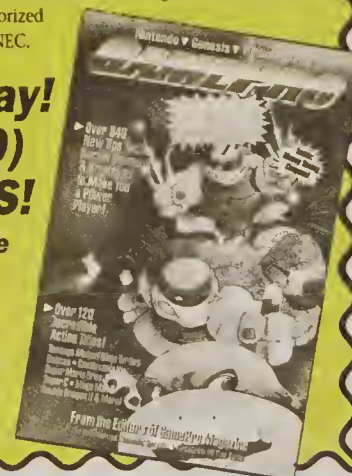
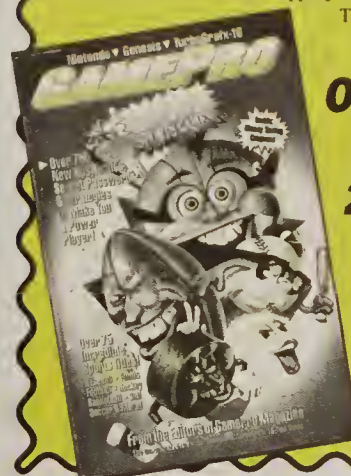
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Each bid must be on the form prescribed by the Commission and must be accompanied by an affidavit of noncollusion.

Each Proposal Offer is to be accompanied by a certified check, on a solvent bank, payable to the Ohio Turnpike Commission in an amount not less than five percent (5%) of the total bid offer. Each such check will be held by the Commission as a guarantee of the performance of the contract if any offer be accepted. The checks submitted by the unsuccessful Bidders will be returned within five (5) days after the date of opening of bids.

The commission will, if it shall accept a bid, accept the highest and most responsive bid offered. If any bid be accepted, such acceptance shall constitute a contract between the Bidder and the Commission. Within five (5) days after acceptance of an offer the successful Bidder shall pay to the Commission, by a certified check, the remaining ninety-five percent (95%) of the estimated purchase price.

The Commission reserves the right to waive technicalities and to reject any and all bids.

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Request for Proposals (RFP). The State of Wisconsin, Department of Health and Social Services, is inviting proposals for a Project Manager to assist in the implementation of a Child Support Data System (CSDS) in its 72 counties. The individual or firm selected to be the Project Manager will be responsible for overseeing and directing state CSDS staff and the CSDS System Contractor to be selected under a separate RFP. Further information and the RFP packet are available from Shirley Anderson, Department of Health and Social Services, Room 450, 1 West Wilson Street, P.O. Box 7935, Madison, WI 53707-7935 (telephone: 608/266-2549). Proposals are due January 14, 1991. The individual or firm selected to be the Project Manager will not be eligible to compete under the RFP to select the System Contractor.

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RFP No. 1904, due Tuesday, January 8, 1991 at 3:30 p.m. for the acquisition of eleven (11) microcomputers, printers, hard disk upgrades and digitizers for COPIAH-LINCOLN COMMUNITY COLLEGE.

RFP No. 1905, due Tuesday, January 8, 1991 at 3:30 p.m. for the acquisition of a ten (10) workstation Local Area Network for AL-CORN STATE UNIVERSITY.

RFP No. 1907, due Thursday, January 3, 1991 at 3:30 p.m. for the acquisition of CD-ROM computer-based training courseware for the CENTRAL DATA PROCESSING AUTHORITY INSTITUTE.

RFP No. 1908, due Thursday, January 3, 1991 at 3:30 p.m. for the acquisition of twentyseven (27) 80286-based microcomputers, two (2) laser printers and four (4) dot matrix printers for the General College for Excellence; and ten (10) 80386-based microcomputers and peripherals for the Department of Education and Psychology at ALCORN STATE UNIVERSITY.

RFP No. 1909, due Thursday, January 3, 1991 at 3:30 p.m. for the acquisition of an uninterruptible power supply for two networked Data General Computers, and a 1.0GB disk subsystem and 2.0GB 8mm cartridge tape for an existing Data General MV/15000 Model 8 computer for the Mississippi Agricultural & Forestry Experiment Station at MISSISSIPPI STATE UNIVERSITY.

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## Cutting costs, not training

*Education is often the first to go in tough times, but maybe it shouldn't be*

BY STEWART L. STOKES JR.  
SPECIAL TO CW

As we prepare to turn the corner into the new year, economic and competitive forces are pressuring U.S. companies to do more with less — and do it faster.

However, while this “do more with less” attitude sounds logical, not all strategic areas of a company should be squeezed.

One important area that is often cast aside — an area that could be a vehicle to pull companies out of the economic hole and ahead of the competition — is training.

### Training close-up

At a quick glance, training — both technical and nontechnical — appears to be big business in this country. According to the American Society for Training and Development (ASTD), an association for training and human resources development professionals, U.S. enterprises currently spend approximately \$210 billion for all types of employee education.

But on a closer look, the overall attention given to training has some flaws.

“As a country, we are still state of the art in technology, but we are far from state of the art in training workers to reap the benefits of that technology. The result is an enormous lack of competitive muscle,” ASTD President John Hurley says.

On top of that, U.S. firms must keep a close eye on their foreign competition in terms of training. Some countries are putting forth serious efforts in training, education and professional development. The ASTD is gathering data for employee training and education abroad and has information to indicate that our country is falling well behind Germany and Japan.

Furthermore, an ASTD publication recently stated that the UK invests approximately \$1,176 per worker in formal job-related training. The U.S. investment? Only \$256 per worker, or approximately one-fifth of the UK amount.

Tom Peters, author of *Thriving on Chaos* and one of the nation's leading spokesmen for enterprisewide change in organizations, underlines the problem more bluntly: “Our investment in training is a national disgrace. Despite lip service about people as our most important asset, we

value hardware . . . over people. Even when we do train, we get it backwards.”

The root of the problem is that firms perceive training to be too expensive. When times get tough, training gets cut.

A second, deep-seated problem is that training is a “lag”

a quick-and-dirty fashion, with predictable results. Little real learning takes place, and the recipients muddle through with a sour taste in their mouths.

Consequently, information systems managers and trainers have an uphill battle to fight in convincing their firms that training should be positioned as a strategic weapon.

With a little perseverance and creativity, however, managers and trainers can come out on top. First, they will need to advocate

sales tactics. For example, one manager actually pulled together a videotape that positioned and rationalized specific training courses. This video, which was shown before each training session, emphasized the importance of training and its practical application.

Another tactic IS managers and trainers can employ is to develop quantitative measurements. Take the example of customer service representatives who are not handling their systems properly: Customers become frustrated because of long waits, and the order often gets botched. Trainers can take advantage of this situation by designing a training course that will solve those specific problems and then turn it into a cost/benefit analysis.

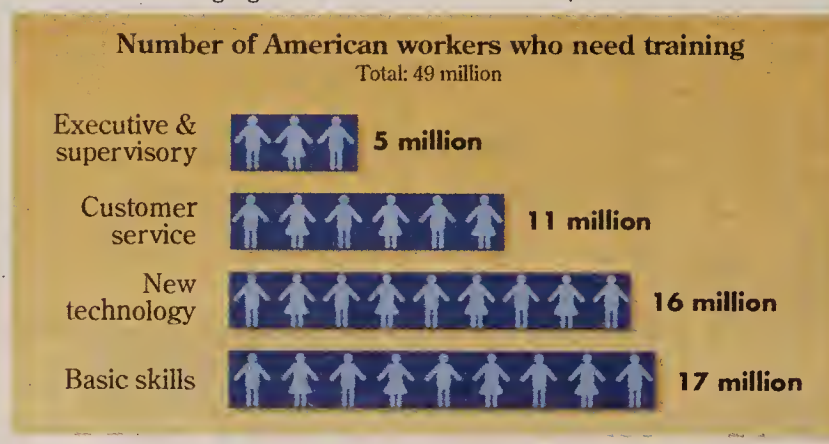
This analysis serves to bring the managers involved together around a common issue. From that point, training solutions can be developed.

The bottom line in this tough national economic climate is that companies must resist the pressures for the easy answer and the quick fix. Planning for the “long pull” and investing in training cannot be sacrificed because it is perceived as too costly. It will end up costing companies more later.

Stokes is a senior vice-president at QED Information Sciences, Inc. in Wellesley, Mass.

### Training shortfall

*Forty-nine million Americans will need training in the following areas in 1990 to meet changing business needs*



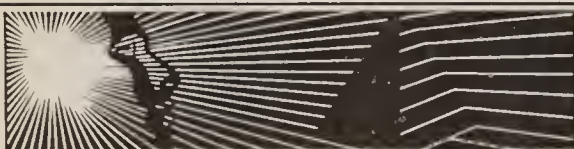
Source: American Society for Training and Development

CW Chart: Doreen St. John

strategy; it is always the last thing to happen when change occurs, and it may even tend to be an afterthought: “Oops, we’d better get these people trained, and the faster and cheaper, the better.” In that situation, training is developed and delivered in

the role of training in an organization. They will need to become strong spokesmen and aggressive marketers by linking training very explicitly to the objectives of the organization.

One way they can do this is by becoming more creative in their



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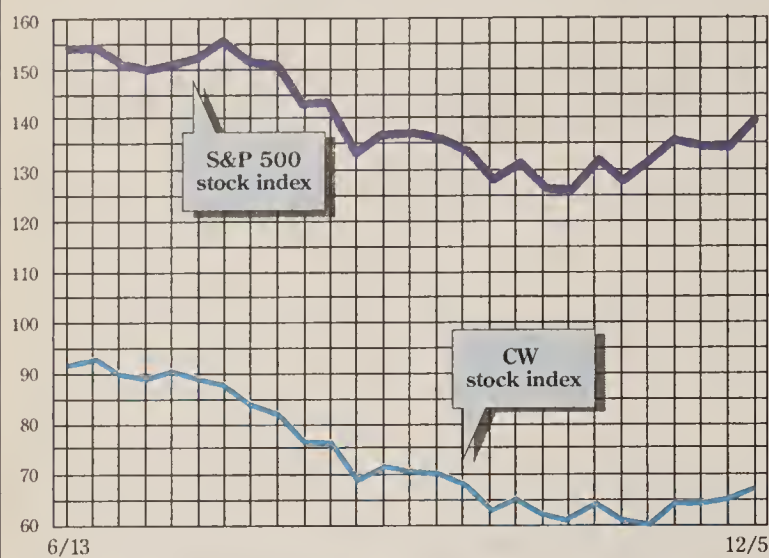


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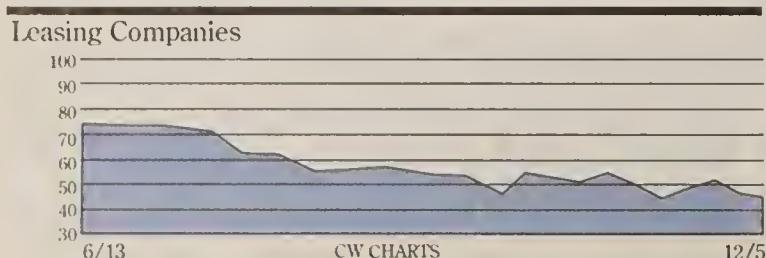
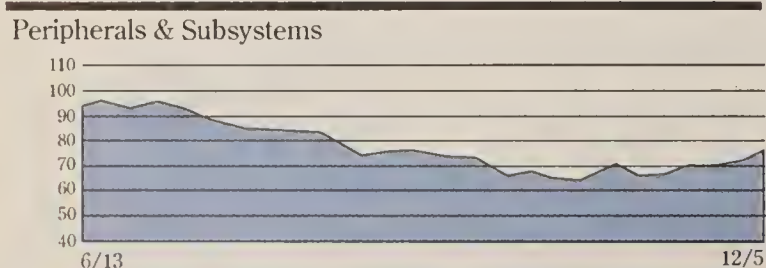
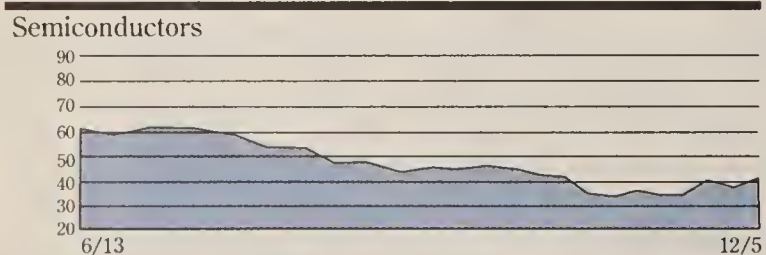
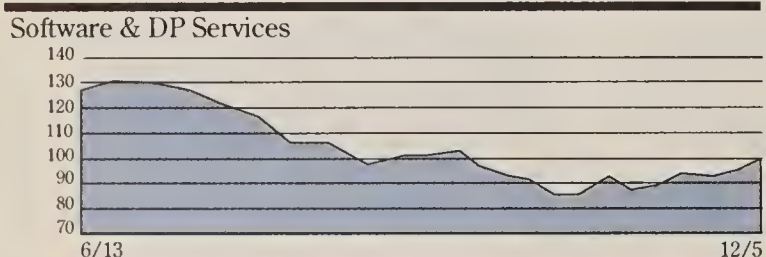
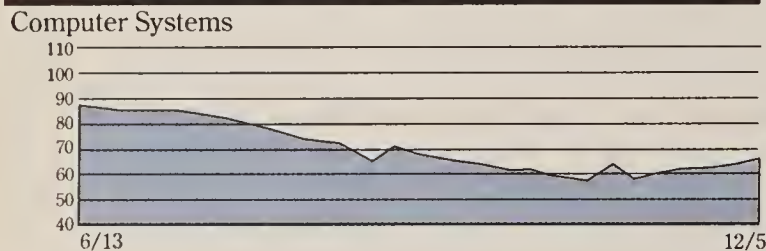
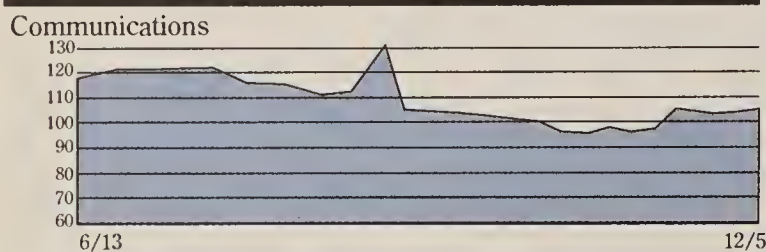
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# STOCK TRADING INDEX



Indexes	Last Week	This Week
Communications	104.1	106.0
Computer Systems	65.1	67.4
Software & DP Services	95.4	99.9
Semiconductors	40.6	43.6
Peripherals & Subsystems	71.2	77.3
Leasing Companies	48.9	47.1
Composite Index	65.5	67.9
S&P 500 Index	134.3	139.4



## Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, DEC. 5, 1990

EXCH	52-WEEK RANGE	PRICE	WEEK NET CHNG	WEEK PCT CHNG
		CLOSE DEC. 5, 1990		

### Communications and Network Services

N	AMERICAN INFO TECHS CORP	69	53	67.5	0.6	0.9
N	ANDREW CORP	26	16	19.75	0.3	1.3
N	ARTEL COMM CORP	10	2	1.75	-0.3	-12.5
N	AT&T	47	30	30.125	-1.8	-5.5
N	AVANTEK INC	4	2	2.375	-0.1	-5.0
N	AYDIN CORP	17	10	12.75	1.3	10.9
N	BELL ATLANTIC CORP	57	40	55.25	2.0	3.8
N	BELLSOUTH CORP	59	49	54.25	1.4	2.6
N	COMPRESSION LABS INC	16	7	11.125	-2.1	-16.0
N	COMPUTER NETWORK TECH	0	0	0.01	0.0	0.0
N	CONTEL CORP	36	23	34.5	1.0	3.0
N	DATA SWITCH CORP	4	2	3.125	-0.3	-7.4
N	DIGITAL COMM ASSOC	27	9	12.5	1.3	11.1
N	DYNATECH CORP	19	12	15.75	0.8	5.0
N	FIBRONICS INTNL INC	13	5	8	0.4	4.9
N	GANDALF TECHNOLOGIES	6	2	2.125	-0.4	-15.0
N	GENERAL DATACOMM INDS	5	2	2.375	0.3	11.8
N	GTE CORP	36	24	29.25	0.8	2.6
N	INFOTRON SYS CORP	9	1	1.125	0.0	0.0
N	ITT CORP	61	40	47.875	1.6	3.5
N	M A COM INC	7	3	6.625	0.6	10.4
N	MCI COMMUNICATIONS CORP	45	19	19.625	-0.3	-1.3
N	NETWORK EQUIP TECH INC	34	5	6.125	0.3	4.3
N	NETWORK SYS CORP	15	8	11	0.0	0.0
N	NORTHERN TELECOM LTD	30	22	28	3.0	12.0
N	NOVELL INC	34	14	32.75	2.3	7.4
N	NYNEX CORP	92	67	71.625	2.0	2.9
N	PACIFIC TELISYS GROUP	52	36	45.625	1.1	2.5
A	PENRIL CORP	9	5	7.125	0.3	3.6
N	PLESSEY PLC	42	39	0.01	0.0	0.0
N	SCIENTIFIC ATLANTA INC	29	9	12.25	0.0	0.0
N	SOUTHWESTERN BELL CORP	65	47	56.125	1.9	3.5
N	3 COM CORP	19	5	9	1.3	16.1
N	US WEST INC	41	32	37.375	-0.1	-0.3

### Computer Systems

Q	ALLIANT COMPUTER SYS	9	1	0.875	0.0	0.0
Q	ALPHA MICROSYSTEMS	5	1	2.563	0.4	17.1
Q	ALTOS COMPUTER SYS	8	5	8.25	0.0	0.0
A	AMOHL CORP	19	10	13.875	0.0	0.0
Q	APPLE COMPUTER INC	48	24	40.125	3.4	9.2
Q	AST RESH INC	28	10	27.875	2.4	9.3
N	BOLT BERANEK & NEWMAN	8	4	4.25	-0.1	-2.9
N	COMPAQ COMPUTER CORP	68	36	56	3.5	6.7
N	COMMODORE INTNL	12	5	10.5	0.6	6.3
Q	COMPUTER AUTOMATION INC	6	0	0.688	-0.2	-21.4
N	CONTROL DATA CORP	22	8	9.375	-0.6	-6.3
Q	CONVEX COMPUTER CORP	0	0	14	0.0	0.0
N	CRAY RESH INC	51	20	32	3.4	11.8
Q	OASYS SYS CORP	1	0	0.156	0.0	0.0
N	DATA GEN CORP	13	4	5.875	1.3	27.0
N	DATAPOINT CORP	4	1	1.5	0.0	0.0
Q	OELL COMPUTER CORP	14	5	13.375	0.3	1.9
N	DIGITAL EQUIP CORP	95	46	58	7.9	15.7
N	FLOATING POINT SYS INC	4	0	1.125	-0.1	-10.0
N	HARRIS CORP	36	14	20.375	1.1	5.8
N	HEWLETT PACKARD CO	50	25	33.375	4.4	15.1
N	HONEYWELL INC	112	71	93.5	3.8	4.2
N	IBM	123	93	114.625	2.3	2.0
Q	INFORMATION INTL INC	14	8	8.75	-0.4	-4.1
Q	IPL SYS INC	17	5	15.75	2.5	18.9
N	MAI BASIC FOUR INC	4	1	1	-0.1	-11.1
N	MATSUSHITA ELEC INOL LTD	166	116	121	-3.3	-2.6
N	MENTOR GRAPHICS CORP	26	9	13.375	0.8	5.9
N	NBI INC	1	0	0.102	0.0	-18.4
N	NCR CORP	87	45	86.625	31.4	56.8
N	PRIME COMPUTER INC	7	4	0.01	0.0	0.0
Q	PYRAMID TECHNOLOGY	36	12	13.625	-0.4	-2.7
Q	SEQUENT COMP SYS INC	34	13	16.75	-1.0	-5.6
Q	SHAREBASE CORP	1	0	0.516	0.0	0.0
Q	SILICON GRAPHICS CORP	31	23	29	0.0	0.0
Q	STRATUS COMPUTER	23	19	29	0.0	0.0
Q	SUN MICROSYSTEM INC	37	15	22.75	2.9	14.5
Q	SYMBOLICS INC	2	0	0.281	0.0	0.0
N	TANDEM COMPUTERS INC	30	9	13.625	1.1	9.0
N	TANDY CORP	43	24	29.75	2.0	7.2
N	ULTIMATE CORP	10	1	2	-0.3	-11.1
N	UNISYS CORP	17	2	3	0.1	4.3
A	WANG LABS INC	6	3	2.875	0.1	4.5

### Software & DP Services

Q	AOVANCEO COMP TECH	NA	NA	0.01	0.0	0.0
Q	AMERICAN MGMT SYS INC	20	11	16.875	1.0	6.3
Q	AMERICAN SOFTWARE INC	18	8	12.75	1.3	10.9
N	ANACOMP INC	5	1	1.75	-0.3	-12.5
Q	ANALYSTS INTL CORP	24	10	14.25	0.8	5.6
Q	ASHTON TATE	15	5	8.5	0.8	9.7
Q	ASK COMPUTER SYS INC	10	4	5.563	0.2	3.5
N	AUTO DATA PROCESSING	60	45	54.875	0.5	0.9
Q	AUTODESK INC	60	32	50.375	4.1	8.9
Q	BMC SOFTWARE INC	30	17	25.25	3.5	16.1
Q	BOOLE & BABBAGE INC	22	11	14	0.3	1.8
N	BUSINESSLAND INC	12	1	1.5	0.1	9.1
N	COGNOS INC	10	4	7.5	-0.1	-1.6
N	COMPUTER ASSOC INTL INC	17	4	8	0.3	3.2
N	COMPUTER HORIZONS CORP	17	8	15	0.8	5.3
N	COMPUTER SCIENCES CORP	59	37	49	1.5	3.2
N	COMPUTER TASK GROUP INC	12	7	7.625	0.4	5.2
N	COMSHARE INC	25	14	18.25	0.3	1.4
Q	CORPORATE SOFTWARE	16	4	7.5	-0.3	-3.2
N	CULLINET SOFTWARE INC	0	0	0.01	0.0	0.0
N	GENERAL MTRS (CLSE)	38	24	37.5	1.6	4.5
Q	GOAL SYSTEMS INTL	18	8	9.0	-0.3	-0.3
Q	HOGAN SYS INC	7	2	2.625	0.4	16.7
Q	INFORMIX CORP	18	4	5.375	0.6	13.2
Q	INTELLICORP INC	8	1	2	0.3	14.3
Q	KEANE INC	0	0	0.01	0.0	0.0
Q	LEGENT CORP	31	17	23	0.0	0.0
Q	LOTUS DEV CORP	39	13	22	0.0	0.0
Q	MANAGEMENT SCI AMER	19	18	0.01	0.0	0.0
Q	MICROSOFT CORP	81	38	75.25	4.9	6.9
Q	NATIONAL DATA CORP	35	8	14.5	0.8	5.5
N	ON LINE SOFTWARE INTL INC	11	4	4.5	0.1	2.9
N	ORACLE SYS CORP	188	5	8.125	1.5	22.6
N	PANSOPHIC SYS INC	19	7	8	0.0	0.0
N	PHOENIX TECHNOLOGIES INC	5	1	2.375	-0.1	-5.0
N	POLICY MGMT SYS CORP	43	30	39	-0.3	-0.6
N	PROGRAMMING & SYS INC	13	5	6	0.0	0.0
Q	RABBIT SOFTWARE INC	0	0	0.01	0.0	0.0
Q	RELATIONAL TECH INC	10	3	9.125	0.0	0.0
N	REYNOLDS & REYNOLDS CO	27	12	15.625	0.1	0.8
Q	SAGE SOFTWARE INC	16	8	10.75	-0.3	-2.3
Q	SEI CORP	22	15	18.25	0.3	1.4
Q	SHAREO MED SYS CORP	18	12	17.875	1.6	10.0
Q	SOFTWARE PUBG CORP	28	12	20.25	4.5	28.6
N	STERLING SOFTWARE INC	11	6	7.75	0.6	8.8
Q	SUNGARO DATA SYS INC	26	10	14	2.0	16.7
Q	SYSTEMATICS INC	46	30	43.625	0.0	0.0
N	SYSTEM CENTER INC	25	6	10.25	-0.1	-1.2
N	SYS. SOFT INC	29	13	26	2.3	9.5
Q	WORSTAR	2	1	1.063	0.0	0.0

### Semiconductors

N	AOV MICRO DEVICES INC	11	4	4.625	0.4	8.8
N	ANALOG DEVICES INC	10	6	6.375	0.4	6.3
Q	ANALOGIC CORP	10	8	8.75	0.4	4.5
Q	CHIPS & TECHNOLOGIES INC	24	5	8.625	0.8	9.5
Q	INTEL CORP	52	28	38.25	0.5	1.3
Q	LSI LOGIC CORP	0	0	0.01	0.0	0.0
N	MICRON TECHNOLOGY INC	16	7	11.625	1.6	16.3
N	MOTOROLA INC	88	49	55	1.0	1.9
N	NATL SEMICONDUCTOR	9	3	4.375	0.5	12.9
N	TEXAS INSTRS INC	44	23	36.25	4.4	13.7
A	WESTERN DIGITAL CORP	15	4	5.25	0.3	5.0

### Peripherals

Q	ALLOY COMP	2	0	0.094	-0.1	-50.0
N	AMINTL INC	5	1	1.375	0.1	10.0
Q	AUTO TROL TECH CORP	4	2	1.875	0.0	0.0
Q	BANCTEC INC	24	10	11.5	-0.8	-6.1
Q	CIPHER DATA PRODS INC	8	4	8.125	0.0	0.0
Q	COGNITRONICS CORP	7	3	6.5	0.5	8.3
N	CONNER PERIPHERALS	31	11	29.25	3.5	13.6
A	DATAPRODUCTS CORP	10	5	0.01	0.0	0.0
A	DATARAM CORP	22	7	9.5	1.6	20.6
N	EASTMAN KODAK CO	44	34	41.875	-0.8	-1.8
N	E M C CORP MASS	10	3	7.875	-0.4	-4.5
Q	EMULEX CORP	9	4	5.75	0.3	4.5
Q	EVANS & SUTHERLAND	35	14	19.75	2.8	16.2
Q	ICOT CORP	2	0	0.375	0.2	99.5
Q	INTERLEAF INC	8	3	4.25	0.9	25.9
Q	IOMEGA CORP	6	3	5.125	0.4	7.9
Q	LEE DATA CORP	3	1	0.01	0.0	0.0
Q	MASSTOR SYS CORP	3	0	0.313	-0.1	-16.5
Q	MAXTOR CORP	17	4	5.375	0.9	19.4
Q	MICROPOLIS CORP	10	3	8.25	1.3	17.9
Q	MINISCRIBE CORP	0	0	0.03	0.0	0.0
Q	MINNESOTA MNG & MFG CO	91	74	83.625	3.3	4.0
N	PERSONAL COMP PRODUCTS INC	5	4	3.563	-0.4	-10.9
Q	PRIMAR CORP	0	0	0.01	0.0	0.0
Q	PRINTRONIX INC	15	6	8.625	0.0	0.0
N	QMS INC	21	9	14.25	2.3	18.8
Q	QUANTUM CORP	26	9	22.625	1.6	7.7
N	RECOGNITION EQUIP INC	8	4	4.875	0.1	2.6
Q	REXON INC	10	4	5.875	0.3	5.6
Q	SEAGATE TECHNOLOGY	20	6	10.75	1.6	17.8
N	STORAGE TECH CORP	35	11	22.5	2.6	13.2
N	TANDON CORP	4	1	2.125	0.4	21.4
N	TEKTRONIX INC	19	12	17.875	0.8	4.4
Q	TELEVIDEO SYS INC	1	0	0.219	-0.1	-22.1
N	XEROX CORP	60	29	36.75	3.0	8.9

### Leasing Companies

Q	AMPLICON INC	12	7	8.25	0.3	3.1
N	CAPITAL ASSOC INTNL INC	5	0	0.438	-0.1	-22.2
N	COMISCO INC	29	15	18	2.1	13.4
Q	CONTINENTAL INFO SYS	1	0	0.039	0.0	-17.0
Q	LDI CORPORATION	17	9	10.875	1.1	11.5
Q	PHOENIX AMERN INC	6	3	5.25	0.0	0.0
Q	SELECTERM INC	7	3	2.75	-0.3	-8.3



## NEWS SHORTS

### Flight from Phoenix brings suit

"Phoenix's trade secrets and its employees are its most valuable assets," Phoenix Technologies, Inc. Chief Executive Officer Ron Fisher said last week, explaining why the firm hauled five ex-members of the latter "most valued asset" group into court on charges of stealing the former. Also charged with misappropriation of trade secrets and unfair business practices is Systemsoft Corp., the software firm founded by several of the defendants after leaving Phoenix. Systemsoft President Robert Angelo denied all charges. The suit, he said, "is clearly the act of a desperate company, intended to divert attention away from Phoenix's fundamental business and product problems."

### Lotus closes Samna offer

Lotus Development Corp. said last week that stockholders of Samna Corp. had tendered 95% of outstanding Samna shares to a Lotus subsidiary formed to acquire word processing vendor Samna. Lotus' \$65 million tender offer of Nov. 7 expired last week with almost 3 million Samna shares being tendered.

### Temporary software exports OK

The U.S. Department of Commerce recently eased restrictions on the export of certain software for temporary purposes such as exhibitions, testing and inspection. These items may now be exported provided they are returned to the U.S. within one year: software used as a "tool of trade," software used in demonstrations not exceeding 120 days at any site and software used in news gathering by accredited media personnel.

### German military requires openness

Midrange computer systems vendors will only be able to sell their products to the German Defense Department if they can prove the products correspond to current X/Open Portability Guide specifications (XPG3). According to the Defense Department, it made the decision in accordance with the German government's administrative recommendations. The Defense Department said XPG3 compatibility is essential for all acquisitions in the midrange data technology sector.

### Bug overstates Army requirements

A bug in the U.S. Army's software for setting inventory levels at divisions' forward support units caused excess inventory equal to a \$110 million, 10-day supply, the U.S. General Accounting Office (GAO) said. The Army issued "an emergency system change request" to fix the software, the GAO said.

### Interface postponed

Interface/91, the long-running industry conference focusing on the communications arena, has been rescheduled to coincide with Comdex/Spring '91, May 20-23 in Atlanta. Originally slated for March 26-28, the show was moved to complement Comdex, according to The Interface Group in Needham, Mass., which produces both events.

### IBM to outline chip breakthroughs

IBM scientists this week are expected to claim world speed records for the types of circuits used in mainframes. In presentations scheduled for today at the International Electron Devices Meeting in San Francisco, IBM plans to describe its use of bipolar technology to set several records using both silicon and silicon-germanium transistors. IBM also plans to announce that it has built CMOS transistors out of a material called silicon-on-insulator, which it says can run three times faster than comparable silicon CMOS transistors.

### MCI wraps EDI in X.400 envelope

MCI Communications Corp. last week announced the MCI EDI 400 service, which is said to provide global exchange of documents that comply with electronic data interchange standards over MCI's X.400-compliant electronic-mail service. The service also delivers to users that do not use X.400, MCI said.

# Northern leaves LAN market

BY ELISABETH HORWITT  
CW STAFF

NASHVILLE — Northern Telecom, Inc. last week pulled the plug on its one remaining local data networking product, Lanstar, and announced that it is officially giving up on the market. The action leaves 100-odd Lanstar customers out on a proprietary limb and wishing that Northern had been more adept at nurturing what they claim is a uniquely useful product.

Lanstar, introduced in 1985, is a proprietary hub that links workstations and local-area networks over unshielded twisted-pair wiring. Its failure to sell is primarily due to its lack of LAN standards support, Northern spokesman Brian Murphy said.

#### Product not to blame

Users, while agreeing that Lanstar needed standards support, blamed Northern for "not recognizing a good product and not knowing how to market and sell it," said Larry Gauthier, systems planning coordinator at the University of Michigan. The university uses approximately two dozen Lanstar hubs to interconnect 1,500 to 2,000 workstations running Banyan Systems, Inc. Virtual Network Software (Vines).

Gauthier and other users praised Lanstar's high reliability as well as its ability to deliver 2.5M bit/sec. to each user on unshielded twisted-pair wiring

over distances of up to 2,000 feet. In contrast, products based on the Ethernet 10Base-T standard — which users reportedly turned to instead of Lanstar — are prone to degradation problems and security leaks and require workstations to be within 308 feet of the wiring plant, Gauthier pointed out.

"I think Lanstar provides a level of functionality that is not offered in other products, through its long reach and high reliability," said Mark Beauchemin, senior network analyst at Lexington, Mass.-based MIT Lincoln Laboratories. Lanstar connects about 200 Lincoln Labs users, whose personal computers communicate via Novell, Inc.'s Netware and Apple Computer, Inc.'s Appletalk, he added.

Northern's promise to support Lanstar for the next 10 years "is no good whatsoever" unless the vendor also promises to update the product's software drivers to support the latest releases of Netware and Vines, Gauthier said.

Stuart Robinovitz, a senior information consultant at the University of Michigan, said this is an important consideration for the university, which may not be able to afford to migrate off its huge Lanstar installation in today's tough economic times.

Northern has chosen to focus its efforts on "connectivity, compatibility and network management" in the wide-area

networking arena through its central office, Fiberworld, and packet-switch product lines, Murphy said. "We will still have LAN, but not hub-oriented LAN capabilities, through the Meridian 1," a digital private branch exchange system that, in addition to providing RS-232-based workstation links, can interface with Ethernet and Appletalk, Murphy added.

**L**ANSTAR PROVIDES a level of functionality that is not offered in other products."

MARK BEAUCHEMIN  
MIT LINCOLN LABS

Northern's decision to abandon local data networking makes sense, given its "pretty spotty track record" in the local networking arena, said Jack Musgrove, an associate director at San Jose, Calif., research firm Dataquest, Inc. Aside from Lanstar, Northern's major thrust into that market was the Meridian Data Networking System. The multipurpose, proprietary data connectivity platform was introduced approximately two years ago with maximum fanfare and was quietly discontinued in the summer of 1989.

## Simmons

FROM PAGE 1

Corp. midrange and desktop machines and fault-tolerant computers from Stratus Computer, Inc. and Tandem Computers, Inc.

"At this point, a lot of what will affect Bank of Boston is beyond their control. The bank is in a defensive mode right now," said Michael Starr, an analyst at Duff & Phelps, Inc. in Chicago. "In the long term, however, this technology change is very positive and will put the bank in a more competitive position."

Like the rest of the bank, however, his six technology groups just finished cutting 8% of their budgets.

Yet even with its third-quarter losses of \$255 million, Bank of Boston "is doing better than a lot of large banks in New England," said Lisa Todario, a bank analyst at SNL Securities in Charlottesville, Va.

"This is strategy on a rubber sheet," Simmons said, stressing that no spending plan has been mapped out yet. "It can be longer or shorter as needed, but it's overwhelming in its simplicity."

The basics of the technological changes that Simmons has under way include consolidating four data centers into two, casting off several midrange vendors and eventually creating a bank-wide network with "any-to-any" communications from each desktop.

"The key issue is access to data and linking up all these isolated technologies," he said.

"The business of banks is not counting money. We're in the information management business," Simmons added. "The communication network is the compute facility."

#### Taking the offensive

Consistency and cost cutting are the watchwords for Simmons' offensive on the hard times facing the financial industry.

"We're reducing and simplifying the choices," he said. "Most important of all, we're empowering the users."

Included on his "recommended short list" for workstations and LANs are IBM and DEC terminals, Intel Corp. 80386- and i486-based PCs and Apple Computer, Inc. Macintoshes, with Microsoft Corp.'s LAN Manager as the preferred standard net-

work operating system. If necessary, users can also turn to Novell, Inc. or Banyan Systems, Inc. LANs.

Bank of Boston also has nine different electronic mail systems which cannot cross-communicate. Eventually, there will be only three that will communicate: DEC's All-In-1, IBM's Toss and CC:Mail.

Simmons' technology blueprint will ultimately mean substantial expenditures, he acknowledged. But the adaptable nature of this "rubber sheet" strategy should adjust to whatever level of financing is available, he said.

"Electronic delivery of our products and services is our survival," he pointed out.

Consolidating data centers and streamlining computer platforms not only makes sense from a cost-cutting perspective, Starr noted, but should dispel the bank's reputation for being slow to respond to technological change.

"Simmons is a very positive influence in the bank," said Michael Landolfi, technology manager for the banking services division. "He's what this bank needed."



## Europe a plus in AT&T bid

BY LINDA LEWIS  
IDG NEWS SERVICE

PARIS — The European market is a big factor in AT&T's bid for NCR Corp. French customers of NCR were mulling over the same questions as customers in the U.S. last week: Will the immense resources of the telephone company offset the difficulties NCR faces in turning from a proprietary systems line to an open systems strategy?

Michel Loury, president of an NCR user committee in France, viewed the proposed merger as mostly positive. "It would enhance NCR's role as a supplier of computer systems to European companies," he said. "Companies not offering Unix are no longer a consideration."

Michel Morin, head of the computer division at FR3, a French television network, said he believes NCR is better positioned to remain independent.

Didier Caspers, who is in charge of the computer department at Banque Nationale de Grece, said his organization's major preoccupation is migrating its NCR 9300 to the new 3000 series and the transition from NCR's ITX proprietary Unix systems to Unix System V. "NCR can't drop its old clients," he said.

# AT&T, NCR engaged in war of words

*A flurry of correspondence between NCR Chairman Charles E. Exley Jr. and AT&T Chairman Robert E. Allen escalated into a heated war of words over the merits of such a merger. What follows are excerpts from that correspondence:*

Dear Bob:

... The board of directors of NCR has unanimously determined to reject AT&T's proposal to purchase NCR for \$85 per share in AT&T stock as not in the best interests of the shareholders and other stakeholders of NCR.

... We at NCR are disappointed that, despite our having shared with you our most candid and careful evaluation of your proposal and the attendant risks for everyone affected by it, you have continued in your efforts to acquire NCR.

... If AT&T is prepared to offer a price which more accurately reflects what you characterized to our board as the substantial prospects of NCR's business plan... NCR is prepared to enter into private discussions.

— Exley to Allen, Nov. 30

Dear Chuck:

... I had hoped by now we would be jointly announcing the successful negotiation of the merger. Unfortunately, this is not the case...

... To our surprise, your advisers promptly dismissed our higher proposal and stated that NCR would not share any information, meet with us or our advisers or even look at a draft of the merger agree-

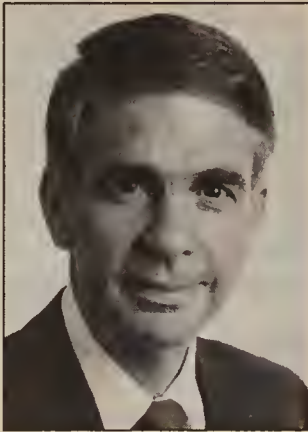
ment until we further increased our price to an unstated amount that you consider to be "preemptive."

... AT&T and its board of directors are committed to the combination of our two companies...

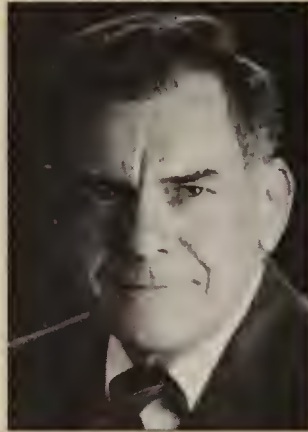
— Allen to Exley, Dec. 2

Dear Bob:

I am puzzled and dismayed by the misleading characterizations of the events to date both in your latest letter and AT&T's



AT&T's Allen



NCR's Exley

Dec. 2 press release. The press release could only have been written by someone with no knowledge of the facts.

... I want to set the record straight. You came to us with an unsolicited proposal to acquire NCR in an \$85 stock-for-stock transaction, which threatened a hostile takeover... We have never participated in negotiations with AT&T relating to any potential business combination.

... The combination of AT&T and

NCR makes no sense from a business or strategic view... Already the process of destroying [AT&T] shareholder value... is under way.

— Exley to Allen, Dec. 3

Dear Bob:

... NCR is prepared to commence negotiations if AT&T offers to pay not less than \$125 per NCR share.

... You have still given us no reason whatsoever to change our view that the transaction you propose makes no business sense, and so it must be a desperate attempt to salvage AT&T's disastrous foray into the computer business.

— Exley to Allen, Dec. 5

Dear Chuck:

I'm sorry to tell you that AT&T feels it now has no choice but to go ahead tomorrow and commence its cash tender offer for NCR at \$90 per share... We intend to continue our computer business under the NCR name and the leadership of NCR's senior management...

Second, we do not intend, in any way, that NCR's people be diverted from dedicating all their energies and resources toward NCR's existing programs and customers... We do not understand how you can maintain... that a merger at \$125 in AT&T stock would work... but a merger at \$90 would be a strategic disaster. Chuck, all we have is a difference of opinion on price.

— Allen to Exley, Dec. 5

## NCR takeover

FROM PAGE 1

will finally bring it success in the computer business, came one day after NCR's board unanimously rejected an unsolicited \$90 per share stock-swap merger proposal. NCR did say that it would be willing to enter into confidential negotiations should AT&T begin its bid with a \$125 per share stock-swap offer.

AT&T and NCR users took the news in stride. Many said they recognized the synergies between the two firms, which have bet their futures on Unix, open systems and a client/server network computing architecture.

"AT&T and its whole networking and communications ability adds a lot to what NCR has to offer," said Timothy Gallagher, head of TP Gallagher and Associates, Inc., a Chicago-based systems integrator specializing in retail banking. Gallagher said he expected it would take three to five years before there would be any benefit from the union.

"I don't see any particular reason for concern," said NCR customer David V. Evans, vice president of information systems at J. C. Penney Co. in Dallas. "I

believe the table is set for someone to be enormously successful in Unix for commercial customers."

### Mind your own strategy

Any anxiety users had involved the prospect that AT&T would meddle with NCR's daring strategy to be the first of the old-line computer companies to abandon its proprietary approaches in favor of Unix and an exclusively microprocessor-based hardware platform. The System 3000 computer family, announced in September [CW, Sept. 24], will use Intel Corp.'s 80386 and I486 chips and range from laptop computers to loosely coupled, parallel systems.

"I'm only nervous if it's going to distract NCR from meeting its objectives" with the System 3000 project, said Paul Gallico, director of the information center at Toys-R-Us, Inc.

Big V Supermarkets, Inc. in Florida, N.Y., has used NCR's 9800 mainframe for 2½ years, along with NCR Towers, PCs and communications front ends from NCR Comten. The lease on the 9800 runs for another two years, and the company is seriously considering a move at that point to a Unix platform — perhaps as a stepping stone to NCR's System 3000. "If NCR is

left to its own devices, that's fine," said Dennis Melville, vice president of IS at Big V.

In counterpoint to the cool reaction of its customers, NCR itself may be brought kicking and screaming to the negotiating table with AT&T. Declaring his company is not for sale, NCR Chief Executive Officer Charles E. Exley Jr. repeatedly blasted what he called AT&T's "pressure tactics" and promised his company would fight the takeover with all available means.

Among other defensive actions, Exley, who turns 61 this week, said he will resign from NCR if AT&T succeeds with its effort. NCR's board also beefed up its "poison pill" defense late last week, modifying shareholder rights provisions.

Several users and analysts argued that AT&T needs NCR more than NCR needs AT&T. Executives at AT&T as much as conceded that point, pledging to keep NCR intact and turn over its own money-losing computer operations to NCR's current management team.

"AT&T's stuff isn't selling, and NCR has come up with an implementation strategy that's similar," said George Brenner, director of corporate IS and vice president at Universal City Studios in Los Angeles. Universal

has a number of AT&T 3B2 minicomputers.

"When the 3B2s run out of gas," he said, "we will look at the next level of Unix box, and if there's an easy migration to NCR, we'll take it."

AT&T's aggressiveness surprised several analysts who originally predicted the telecommunications giant would not pursue a hostile takeover action and risk the expense or the ill will it would cause within NCR's top ranks.

### Unexpected urgency

"Frankly, I'm kind of surprised," said Harvey L. Poppel, a partner at Broadview Associates, a Fort Lee, N.J.-based information technology merger and acquisition firm. Such a move, he said, is totally against AT&T's typical modus operandi and "shows a sense of an imperative that this is a company they absolutely must have."

Robert M. Kavner, AT&T's group executive for data systems and federal systems, called the proposed merger "an essential strategic step for us" and said it would produce "a strong American company to compete in the global marketplace, with \$45 billion in combined assets."

AT&T's desire for NCR, which has been rumored in other

years, is not the first indication AT&T was looking for a solution to its problems in building a viable computer business. During the past nine months, AT&T has inked three different OEM deals with Pyramid Technology Corp., Tandem Computers, Inc. and Intel Corp. It also holds a 19.1% equity stake in Sun Microsystems, Inc.

"AT&T needs a stronger position in the computer market or has to get out of it," said Tom Nolle, president of CIMI Corp., a technology assessment company in Voorhees, N.J. "The 3B has not succeeded in the commercial market and is not going to."

AT&T's resources would fund NCR's "gutsy and desperate" Systems 3000 gambit, Nolle said. No other company has successfully migrated its base to open systems, he noted, adding, "NCR needs to establish the credibility of the System 3000 or their life span will be measured in years."

However, promises to retain NCR's status quo are suspect, he continued. He estimated there was a 15% to 20% overlap in field sales forces between the two companies, a 30% manufacturing overlap and an even greater duplication among headquarters and management personnel.



## Exley to AT&T: Not at any price

**I**n a telephone interview Friday morning, NCR Chairman Charles E. Exley Jr. made clear his personal opposition to a merger with AT&T, even if the price rose to a point where it would make sense for NCR shareholders. Following are excerpts of the interview with Computerworld Midwest Bureau Chief Ellis Booker.

**Is NCR as of this morning still planning to fight AT&T's hostile takeover attempt?**

Oh, yes indeed.

**If it's a disaster at \$90 per share, why not at \$125?**

It will be a disaster at \$90, at \$125, at \$200 . . . At \$125 per share, it does make business sense for NCR shareholders . . . If they were willing to meet that price — and I hope they do not — I would feel it was my duty, hate it though I would, to sell the company.

**What happens to NCR if it fights a protracted battle? At some point, won't this harm customers?**

Reaction we're getting so far from customers is positive. The raider has said wonderful things about us . . . If I were an AT&T customer, on the other hand, I'd be mighty concerned.

If we were running the [merged computer operations], we would orphan the 3B2 as fast as we could . . . We have selected Motif; they have selected Open Look. Open Look would get axed. Our client/server architecture is based on the PC model; theirs is on the Unix model. The Unix model would get axed.

**You were Burroughs Corp.'s chief financial officer until Sept. 1, 1976. From this vantage point, do you think an NCR/AT&T combination risks becoming another Unisys?**

I don't think it would be that bad. That's an especially colossal calamity. At least we begin with a healthy company on one side — NCR. But I think we've got to remember that a sick elephant can kill a healthy dog just by falling on it.

# AT&T has a need to fulfill

BY ELLIS BOOKER  
CW STAFF

"Why are we doing it now?" AT&T Computer Systems President Richard McGinn asked rhetorically. "Because there's an absolute sea change customers are making as they move from traditional computing to network computing."

McGinn said this shift is as fundamental as the move from centralized processing to the personal computer in the 1980s, but he conceded that "organic growth only, quite honestly, won't be enough" for AT&T to gain a leadership position.

In its heart, then, AT&T hopes a combination with NCR Corp. will give it the market access and management savvy it desperately needs to realize its

goal of becoming a significant provider of integrated computer and communications systems.

NCR is also attractive because its areas of dominance, the financial and retail industries, do not overlap with AT&T's strengths in the lodging, telecommunications and federal government markets.

NCR, the fifth largest com-

puter company in the U.S., also claims an attractive international business, with 60% of its sales coming from outside the U.S. AT&T's computer group counts only about \$100 million of its annual \$2 billion in revenue from overseas sales.

From a product standpoint,

nounced in October, both use Hewlett-Packard Co.'s New Wave graphical user interface.

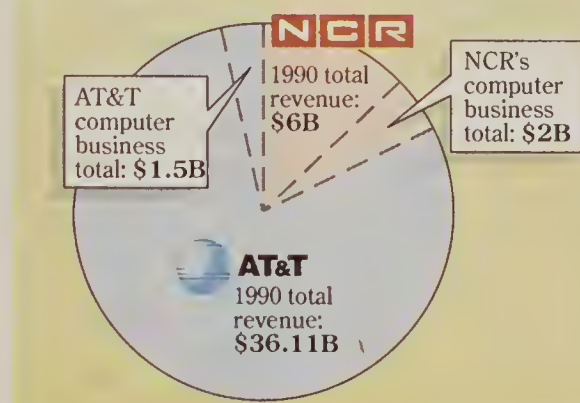
NCR was also an early backer of Unix, the operating system developed by AT&T Bell Laboratories, which has become a cornerstone in AT&T's postdivestiture work-group, server and high-end computer strategy.

Finally, NCR and AT&T have the same network management approach, the former using an OEM version of AT&T's Stargroup Unix-based LAN manager.

However, when it comes to discussing current hardware products — specifically, whether the much-maligned 3B2 minicomputer that AT&T launched in 1984 will be terminated as a result of a merger with NCR — AT&T officials ap-

### Lines of business

While NCR is only 1/6 the size of AT&T, its computer business is 1/3 larger than the size of its potential acquirer



Source: Prudential-Bach Securities, Inc.

CW Chart: Marie Haines

too, the congruences are strong.

In software, both AT&T and NCR have client/server computing approaches that actually share common components. AT&T's Rhapsody, the office automation and work flow automation platform it launched in March, and Cooperation, the objected-oriented office and work flow environment NCR an-

swer to be on the defensive.

"Fifty thousand [3B2s] have been sold since '84 . . . about the same number as NCR Towers," McGinn said, adding, "It's a profitable business for us."

Both the Tower and the 3B2, he continued, will be transcended in time with Intel Corp. i486- and reduced instruction set computing-based architectures.

## Hostile

FROM PAGE 1

especially one like this where [the target's] management has been doing a good job," said Scott Smith, an analyst at Donaldson, Lufkin & Jenrette.

The proposed AT&T buy could put anywhere from a six-month to a year-long crimp in NCR's ambitious System 3000 strategy, said Judith Hurwitz, an analyst at Patricia Seybold's Office Consulting Group in Boston — that is, if NCR's current management remains and is given the reins. Hewlett-Packard Co.'s 1988 acquisition of workstation maker Apollo Computer, Inc. — one of the friendlier computer industry combinations in recent

history — produced costly product line delays, she said.

When both sides are willing — even eager — the melding of disparate technologies and corporate cultures inevitably turns out to be a longer, harder and costlier proposition than anticipated.

The added threat that critical talent will walk out the door in protest has kept most firms from even trying to acquire a computer company against its will, Smith said.

Nevertheless, some industry observers and players said they believe that technological, financial and corporate trends are converging to create a computer industry far less unfriendly to hostile takeovers than has traditionally been the case.

"These acquisitions will make more sense as the industry matures and standardization proliferates," said Bahar Gidwani, a computer industry analyst based in New York. "The more standards each company relies on, the less disruption of their respective product lines after a takeover." Outsourcing will also ease transitions, he said.

Merger veteran Joe M. Henson, now chairman of Legent Corp., said the AT&T bid "is vastly different from the debt-financed hostile bids driven by financiers that we were seeing so many of a short while back."

Rather, Henson said, "there is a marketplace imperative to this consolidation" of NCR and AT&T, with "too many players with too many products chasing

too few prospects."

Henson has seen the combination game from all positions. As chief executive officer of Prime Computer, Inc., he presided over that company's hostile acquisition of computer-aided design and manufacturing player Computervision, Inc. in 1987. Henson was still aboard one year later when MAI Basic Four, Inc. mounted its hostile takeover attempt against an engorged Prime that was struggling with indigestion. Subsequently, he guided software firms Morino

Associates, Inc. and Duquesne Systems, Inc. through their merger into Legent.

Industry economics, he said, are making a moot point of the hostile/friendly distinction.

"NCR isn't going to make it alone," he said. Any work-force reduction or product line trimming, he added, "will probably happen anyway. In the long run, isn't it better that it happens because of a merger that creates a viable [computer industry contender], rather than at the mercy of economic necessity?"

### TAMING OF THE FEW

Consummated hostile takeovers have not fared well in the computer industry. Examples include the following:

**1985: Datapoint, Inc.** falls to arbitrageur Asher Edelman. Many losses, reorganizations and lawsuits later, a vastly pared-down Datapoint reported a profitable quarter last week.

**1986: Burroughs Corp.** acquires Sperry Corp. and emerges as Unisys Corp., which is for a short time the second largest computer vendor in the world. In the wake of losses and draconian work-force cuts, Unisys is now seen as a ripe acquisition target, with its market value slipping to well below \$1 billion.

**1988: Computervision, Inc.** falls to Prime — but technological woes leave Prime open to the hostile advances of MAI Basic Four, Inc. Nine months of resistance devastate Prime's bottom line, employee roster and morale. White knight J. H. Whitney & Co. makes eleventh-hour purchase of Prime.

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## TRENDS

## Strategic Systems Software

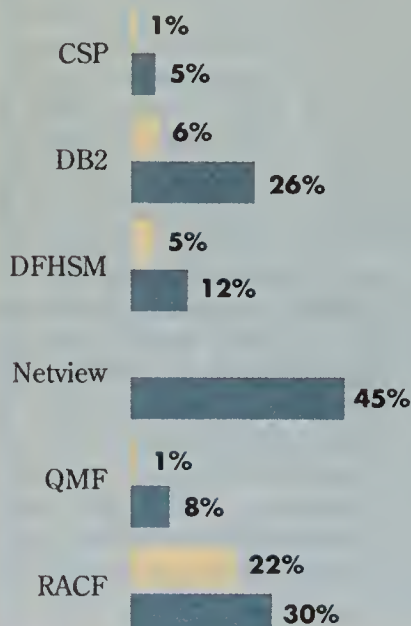
Six major IBM systems software products have strengthened their foothold within the MVS arena during the last few years

January 1987 September 1990

## Penetration at MVS sites

(Percent of U.S. IBM/PCM MVS mainframe sites)  
(Base: 4,800)

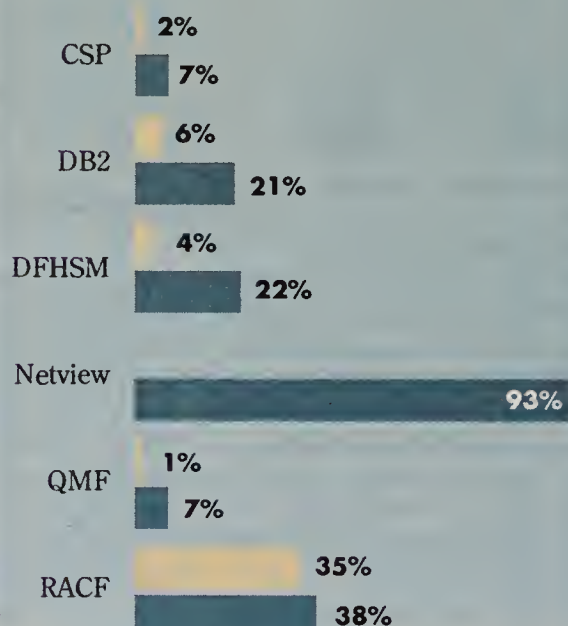
*Netview has gained acceptance as the predominant network management tool, while IBM's RACF security package and other systems software offerings have asserted themselves*



## Installed market share

(Percent of overall market at U.S. IBM/PCM MVS mainframe sites)  
(Base: 4,800)

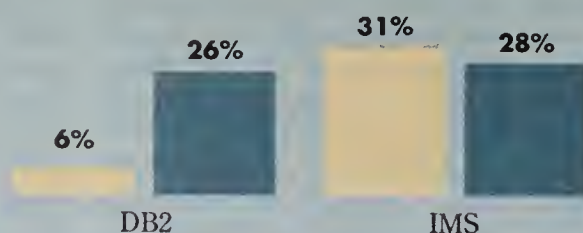
*Each product category has also experienced a jump in overall market share. Once controlling only 6% of the entire MVS DBMS market, IBM's DB2 can now claim a 21% share*



## DB2 vs. IMS

(Percent of U.S. IBM/PCM MVS mainframe sites)  
(Base: 4,800)

*The growth of DB2 has been great during this period, but IBM's IMS still has a major presence, experiencing only a slight drop from its 1987 position*



Source: Computer Intelligence, La Jolla, Calif.

CW Chart: Tom Monahan

## N E X T W E E K

As Operation Desert Shield enters its fifth month, U.S. armed services officials are evaluating how local- and wide-area networks have helped smooth the fastest mobilization in military history. IS managers at **Oakland Army Base** only have to look out their windows to see how their electronic tracking and planning systems are working.



Robert Holmgren

**J**ohnson Wax is serious about re-engineering with information systems — so much so that the IS department has transformed its own human resources allocation process with an innovative database application that matches jobs and projects with skill levels. In Depth examines the leading-edge IS strategy of this global manufacturer.

## INSIDE LINES

## Big John on the prowl?

Rumors are rife in the industry these days that Dun & Bradstreet Software is looking closely at a privately held software company in Michigan to augment D&B Software's line of products for the IBM Application System/400 midrange computer series. Whether it would be an outright acquisition or some type of marketing agreement remains uncertain at this point, but the Michigan software house responded to *Computerworld's* questions with a big "no comment." A spokesman for D&B Software added that it is company policy not to comment on acquisition or divestiture rumors.

## And a very merry to you, too

Wang has confirmed that it will close many U.S. operations for an unpaid "holiday shutdown" from Dec. 24 through Jan. 2 in an effort to cut expenses during a traditionally slow time of year throughout the industry. According to a Wang spokeswoman, manufacturing facilities will not be affected, and skeleton crews will be working in various departments.

## Just down the street

Gary Kennedy, who resigned as president of the Oracle USA sales division during an Oracle Systems shake-up in early September, has landed on his feet. The former chairman of Oracle Complex Systems in Arlington, Va., is now just a hop, skip and jump away at PRC, Inc., a systems integration company in McLean, Va. Kennedy, whose aggressive sales style helped build Oracle into a \$971 million software giant, is now president and chief executive officer at \$700 million PRC, a Black & Decker subsidiary. "I considered many offers after I left Oracle," Kennedy said last week. But it only took six weeks from the time he left Oracle Complex Systems on Oct. 15 until he became a top cat once again.

## AT&amp;T lightens up

Robert Kavner of AT&T said last week that a stripped-down version of Unix is in the works for personal computers. Addressing Technologic Partners' semiannual gathering of the tribes in California, Kavner said developers are working on a version that will require as little as 4M bytes of random-access memory and a 40M-byte hard disk. "Unix Lite" will take out all the extraneous enhancements to Unix and make them available as add-on packages, he said.

## Next, not in line

An impromptu and decidedly unscientific survey at the recent Cause '90 conference for campus information systems folks found virtually no intent to buy a Next, Inc. machine. The reason? The machine is costly, which is bad enough, but the college computer chiefs also complained that the level of support for the machine, as required by Next, is way out of line. One conference attendee said he bought three of the machines from another university to get around the support requirements. Next started off planning to sell the machine to campus computer users but has since decided also to market to corporate customers.

## Will they call in Sherlock Holmes?

Scotland Yard has set up a computer crime unit to keep track of computer virus outbreaks in hopes of compiling evidence and cataloging the damage caused by a particular virus, assuming the virus author is nabbed. The unit is staffed with four detectives and based at New Scotland Yard, London. Under the UK's new Computer Misuse Act of 1990, a virus author could be imprisoned for as long as five years.

*NCR CEO Charles E. Exley Jr. showed he hasn't lost his sense of humor during the running battle to stave off AT&T's takeover attempt. Taking time out from the NCR war room to make an appearance at Businessland's Technology Summit in Atlanta last Thursday, Exley wisecracked, "I heard AT&T is going to change its tag line to 'Reach out and grab someone.'" But that was all he had to say, and he dodged a press ambush on his way back to Dayton, Ohio. We'll be staying on top of the action and working on the postmortems, so call in your opinions and insights to Assistant News Editor Jim Connolly at (800) 343-6474, message COMPUTERWORLD on MCI Mail or fax documents to (508) 875-8931.*



Hannover, Germany, 1990: European experts judging at CeBIT, the world's largest computer exposition, give their top design award to the Wyse PC Model 3225.

■ No big surprise. Wyse design has been winning over computer professionals for nearly a decade. It's won, in fact, an installed base of more than 3,000,000 terminals and PCs. ■ Because Wyse design is also a wise investment. It delivers more features, styling and ergonomics than the competition. For less money. Witness, for example, the Wyse family of Novell-certified personal computers. ■ The CeBIT award winner, our Model 3225, is a 25 MHz 386

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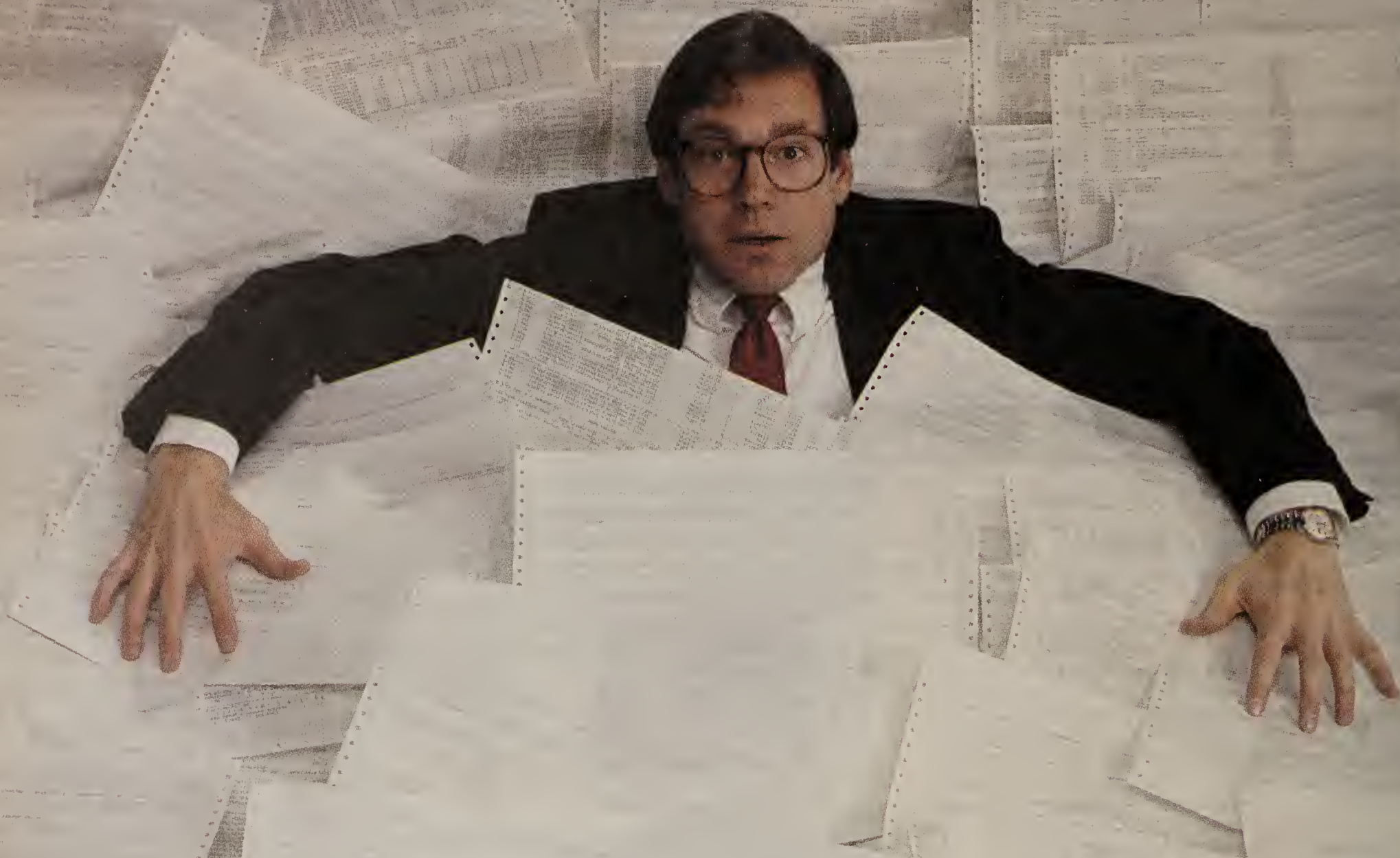
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